STR-V45L

AEP Model
UK Model

QUARTZ

FM STEREO/FM-AM RECEIVER

SPECIFICATIONS

GENERAL

Power Requirements: 220 V ac, 50/60 Hz (AEP model)
240 V ac, 50/60 Hz (UK model)

Power Consumption: 180 W (AEP model)
210 W (UK model)

Dimensions: Approx. 430 (w) x 135 (h) x 380 (d) mm
17 (w) x 5 ¼ (h) x 14 ⅞ (d) inches
including projecting parts and controls

Weight: Approx. 8.5 kg, 18 lb 12 oz (net)
9.7 kg, 21 lb 7 oz (in shipping carton)

AMPLIFIER SECTION

Continuous RMS Power Output: (less than 0.04% THD, both channels driven simultaneously)
At 1 kHz
40 + 40 W (8 Ω)
At 20 Hz – 20 kHz
40 + 40 W (8 Ω)
According to DIN 45500
40 + 40 W (8 Ω)

Power Bandwidth (IHF): 5 Hz – 35 kHz

Harmonic Distortion: Less than 0.04 % at rated output

Intermodulation (IM) Distortion: (60Hz : 7kHz = 4 : 1) Less than 0.04 % at rated output

Damping Factor: 50 at 1 kHz, 8 Ω

Dynamic Headroom: 1.4 dB

Residual Noise: Less than 0.23 mV at 8 Ω

Inputs:

	Sensitivity	Impedance	S/N	Weighting network
PHONO	2.5 mV (–50 dB)	50 kΩ	80 dB 77 dB*	A
TAPE 1, 2	150 mV (–13.5 dB)	50 kΩ	97 dB 74 dB*	A
AUX	150 mV (–13.5 dB)	50 kΩ	97 dB 74 dB*	A

* '78 IHF, Measured with rated output power into 8 Ω loads (both channels driven simultaneously) at 1 kHz.

– Continued on page 2 –

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®
SERVICE MANUAL

Outputs:

REC OUT 1, 2	Voltage 150 mV (–13.5 dB), Impedance 10 kΩ
HEADPHONES	Accepts low-impedance headphones
SPEAKERS	8 – 16 Ω speakers are suitable

Measured with rated input, FM 30 % modulation

Frequency Response: PHONO: RIAA equalization curve ±0.5 dB
AUX, TAPE 1, 2: 5 Hz – 50 kHz $^{+0}_{-1}$ dB

Tone Controls: BASS: ±10 dB at 50 Hz
TREBLE: ±10 dB at 20 kHz

Loudness Control: (att. 30dB) +10 dB at 50 Hz, +3 dB at 10 kHz

Filter: LOW: 12 dB/octave attenuation below 15Hz

FM TUNER SECTION

Tuning Range: 87.5 – 108.0 MHz

Antenna Terminals: 300 Ω balanced, 75 Ω unbalanced

Intermediate Frequency: 10.7 MHz

	(at 40 kHz deviation)
Sensitivity:	at 46 dB quieting 18.3 dBf, 4.5 μV (13 dB) (mono) 38.3 dBf, 45 μV (33 dB) (stereo)
Usable Sensitivity:	11.2 dBf, 2.0 μV (6 dB) (IHF) 9.8 dBf, 1.7 μV (4.5 dB) (S/N 26 dB)
Signal-to-noise Ratio:	72 dB (mono), 66 dB (stereo)
Harmonic Distortion:	at 100 Hz 0.1 % (mono), 0.25 % (stereo) at 1 kHz 0.1 % (mono), 0.2 % (stereo) at 6 kHz 0.15 % (mono), 0.2 % (stereo)

Separation: 40 dB at 100 Hz, 50 dB at 1 kHz,
35 dB at 10 kHz

Frequency Response: 40 Hz – 12.5 kHz ±0.3 dB
30 Hz – 15 kHz $^{+0.5}_{-1.5}$ dB

Selectivity: 80 dB (300 kHz)

Capture Ratio: 1.5 dB

AM Suppression Ratio: 60 dB

Image Response Ratio: 85 dB

IF Response Ratio: 100 dB

Spurious Response Ratio: 95 dB

RF Intermodulation: 78 dB (IHF), 93 dB (2.4 MHz)

Sub-carrier Product Ratio: 55 dB

Muting Threshold: Approx. 25.2 dBf, 10 μV (20 dB)

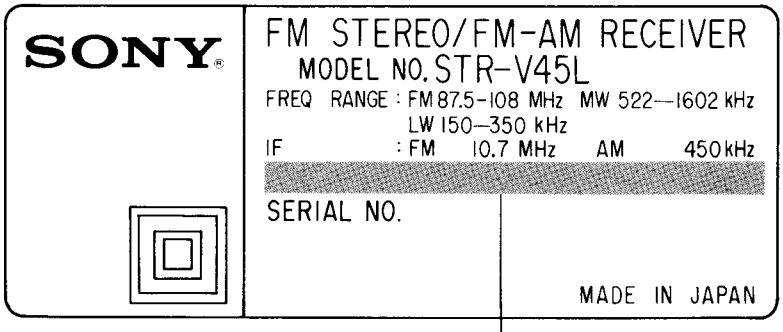
Auto Tuning Level: LOW: 30 dBf, MID: 40 dBf, HIGH: 55 dBf

AM TUNER SECTION

	MW	LW
Tuning Range:	522 kHz – 1,602 kHz (9 kHz steps)	155 kHz – 344 kHz (1 kHz steps)
Antenna: built-in antenna	provided	provided
external antenna terminal	provided	provided
Intermediate Frequency:	450 kHz	450 kHz
Usable Sensitivity: built-in antenna	250 μV/m (48 dB/m) (1,000 kHz)	500 μV/m (54 dB/m) (254 kHz)
external antenna	100 μV (40 dB) (1,000 kHz)	150 μV (43.5 dB) (254 kHz)
Signal-to-noise Ratio: (at 50 mV/m (34 dB/m))	52 dB	52 dB
Harmonic Distortion: (at 50 mV/m (34 dB/m), 400 Hz)	0.5 %	0.5 %
Selectivity:	40 dB (9 kHz)	40 dB (9 kHz)

MODEL IDENTIFICATION

– Specification Label –


SONY
FM STEREO/FM-AM RECEIVER
MODEL NO. STR-V45L
FREQ RANGE : FM 87.5-108 MHz MW 522—1602 kHz
LW 150—350 kHz
IF : FM 10.7 MHz AM 450 kHz
SERIAL NO.
MADE IN JAPAN

AEP MODEL AC 220V~ 50/60Hz 180W
UK MODEL AC 240V~ 50/60Hz 210W

SERVICING NOTES

INSTALLATION PRECAUTION

The epoxy resin used in a luminous diode is a kind of thermosetting resin, but as a diode must let the light pass through, its heat resistance cannot be raised by mixing silica or glass fiber.
Thus, the resin used in the luminous diodes is usually weak against heat. As the tensile strength is not so strong while it is heated, note the following precautions during soldering.

1) Perform the soldering within 5 seconds with a soldering iron below 25W. The clearance between the tube and the board should be more than 3 mm (Fig. 1).

2) When changing the position of the luminous diode, do not move it right after soldering, but move it after it naturally cools off.

3) When bending the lead terminals, be sure to bend the point 2 mm farther from the tube. At this time, fix the foot of the terminal with a round nose plier and be sure that no force is applied to the tube. If not, a crack may occur (Fig. 2).

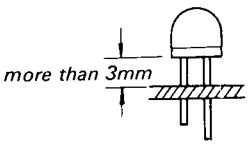


Fig. 1

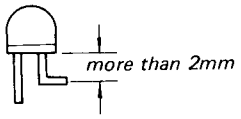


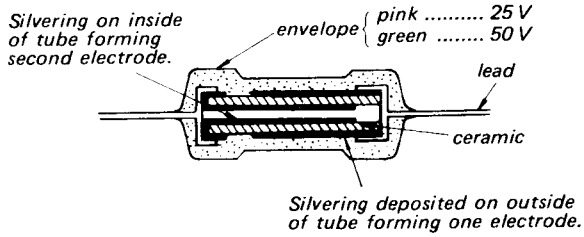
Fig. 2

THE CERAMIC CAPACITORS

This set uses tube-type ceramic capacitors whose shape is identical with the carbon resistors. Be careful not to use resistors instead of capacitors in repairing.

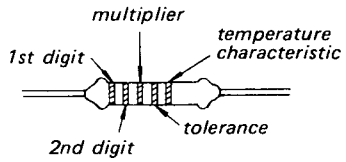
Disc-type ceramic capacitors can be used for replacing those originally used in the set.

Two kinds of drilled holes are provided in some patterns for mounting the tube-type and disc-type ceramic capacitors. Use appropriate holes where applicable.

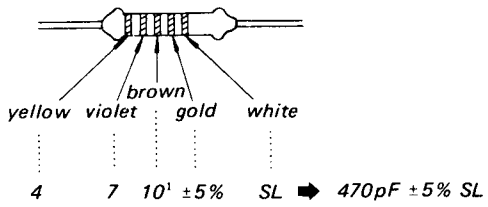

Silvering on inside of tube forming second electrode.
envelope
pink ..... 25 V
green ..... 50 V
lead
ceramic
Silvering deposited on outside of tube forming one electrode.

COLOR CODE (in pF)

Color	1st or 2nd Digit	Multiplier	Tolerance	Temperature characteristic
brown	1	10^1		Y
red	2	10^2		D
orange	3	10^3		
yellow	4	10^4		RH
green	5			
blue	6			
violet	7			UJ
gray	8		±30%	X
white	9			SL
black	0	10^0	±20%	CH
gold		10^{-1}	± 5%	V
silver		10^{-2}	±10%	B



Example:



Handling Precautions for MOS ICs

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.

(Particular care should be taken under conditions of low humidity.)

Precautions in Replacing MOS ICs

1. Store new ICs by inserting them into a urethane-polyester cushion (which is somewhat conductive), or wrapping it in aluminum foil, so that all the pins are at the same potential.
   (The ICs should be stored in that manner until mounted on the circuit board.)

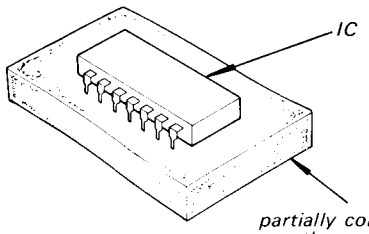


Fig. A

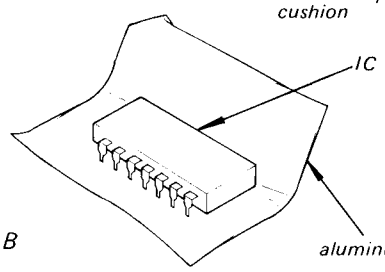


Fig. B

2. Check the soldering iron for possible power-line leakage current. Make sure that there is no leakage path by connecting an ohmmeter to the tip of the soldering iron and the plug as shown in Fig. C. If there is a leakage path, use some other soldering iron.

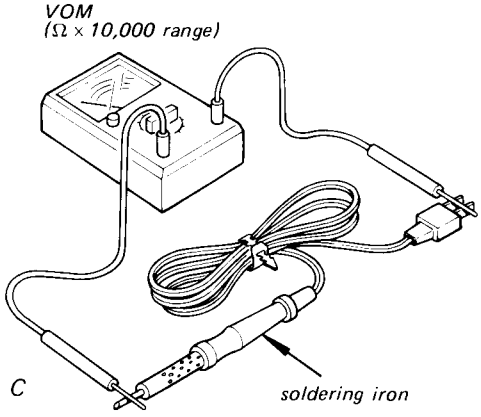


Fig. C

3. Equalize any potential difference between the clothes, the tools in use, the work bench, the set being worked on, and the packaged IC by touching them all in succession with the hands or a conductive wire or tool.
4. The following are effective methods for handling ICs that remove the potential difference across the oxide layer.
   - Use a paper clip modified by soldering in a wire braid insert.

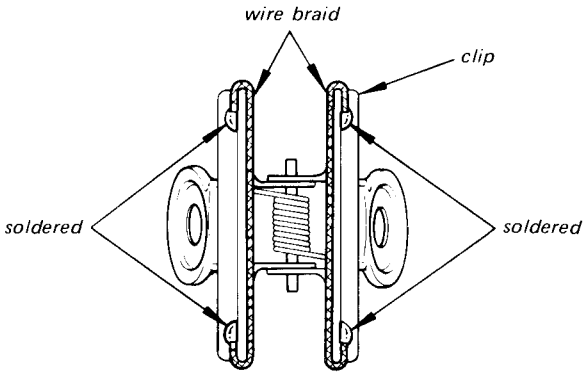


Fig. D Make sure that there is no solder on the inside.

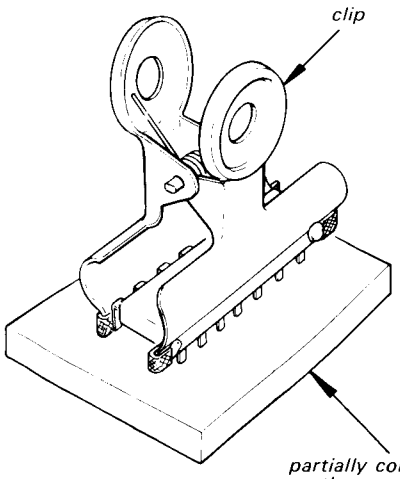


Fig. E

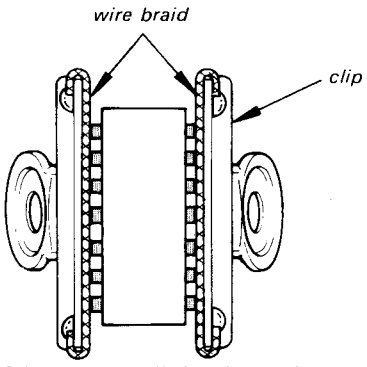


Fig. F Make sure that all the pins are in contact with the wire braid (all the pins will then be at the same potential.).

- Take a short length of fine bare wire and wind it around the IC so that it shorts all the pins of the IC, while it is still in the urethane-polyester cushion or aluminum foil. This ensures that all the pins are at the same potential.

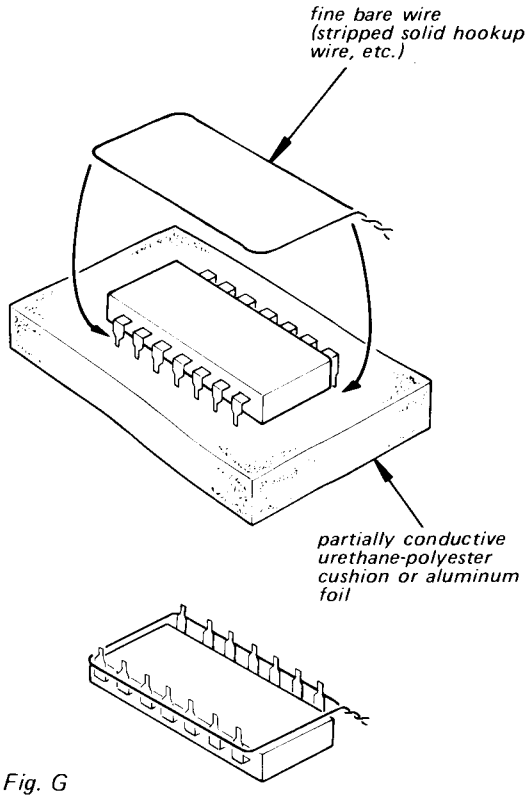


Fig. G

- When it is necessary to handle the IC with the fingers, do not touch any pin, and hold the IC at the ends of its plastic-package case as shown in Fig. H.

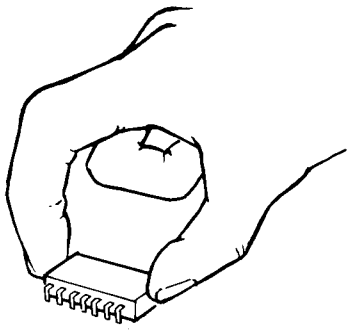


Fig. H

5. Method of Mounting
Insert the IC while holding it with the modified clip, and solder all the pins with the clip still shorting the pins. (Similarly, solder all the pins while the bare shorting wire is still wound around them.). Remove the clip or the bare shorting wire only after all the pins have been soldered.

Precaution while Checking C-MOS ICs

The C-MOS ICs (Complementary MOS) are MOS ICs that have their output sections made up of N-channel and P-channel push-pull stages to increase their speed of operation. If the output terminal of these ICs comes into contact with B+ or B- voltage, then the FET which is ON at that time will either become shorted or open.

This is valid for all the output sections that are connected together by the interconnections. Even the circuits that are physically separated (and not on the same board) can be destroyed simultaneously.

Example:

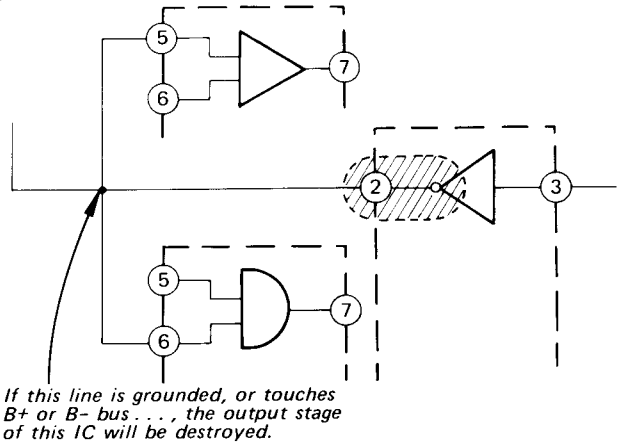
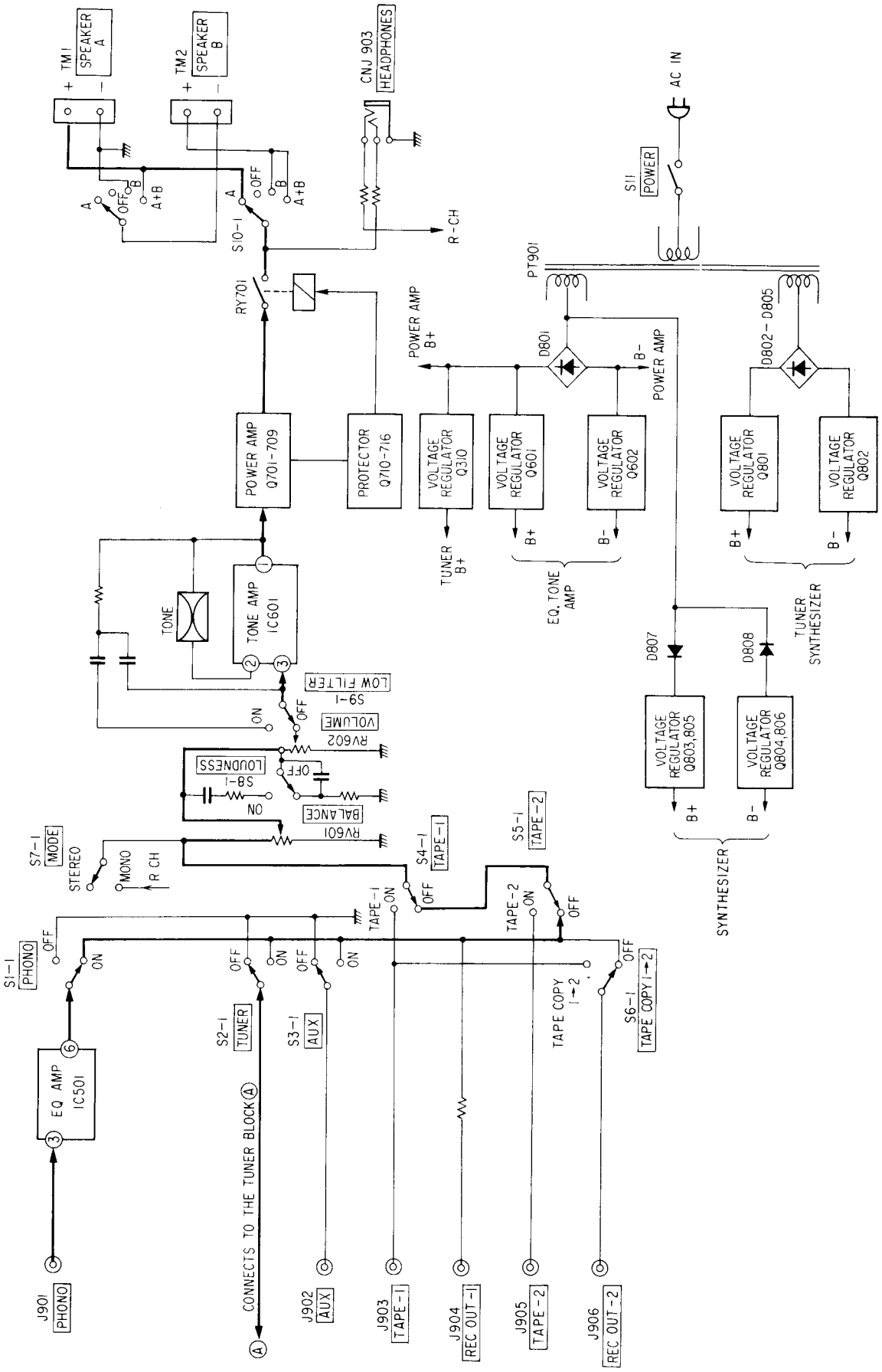


Fig. I

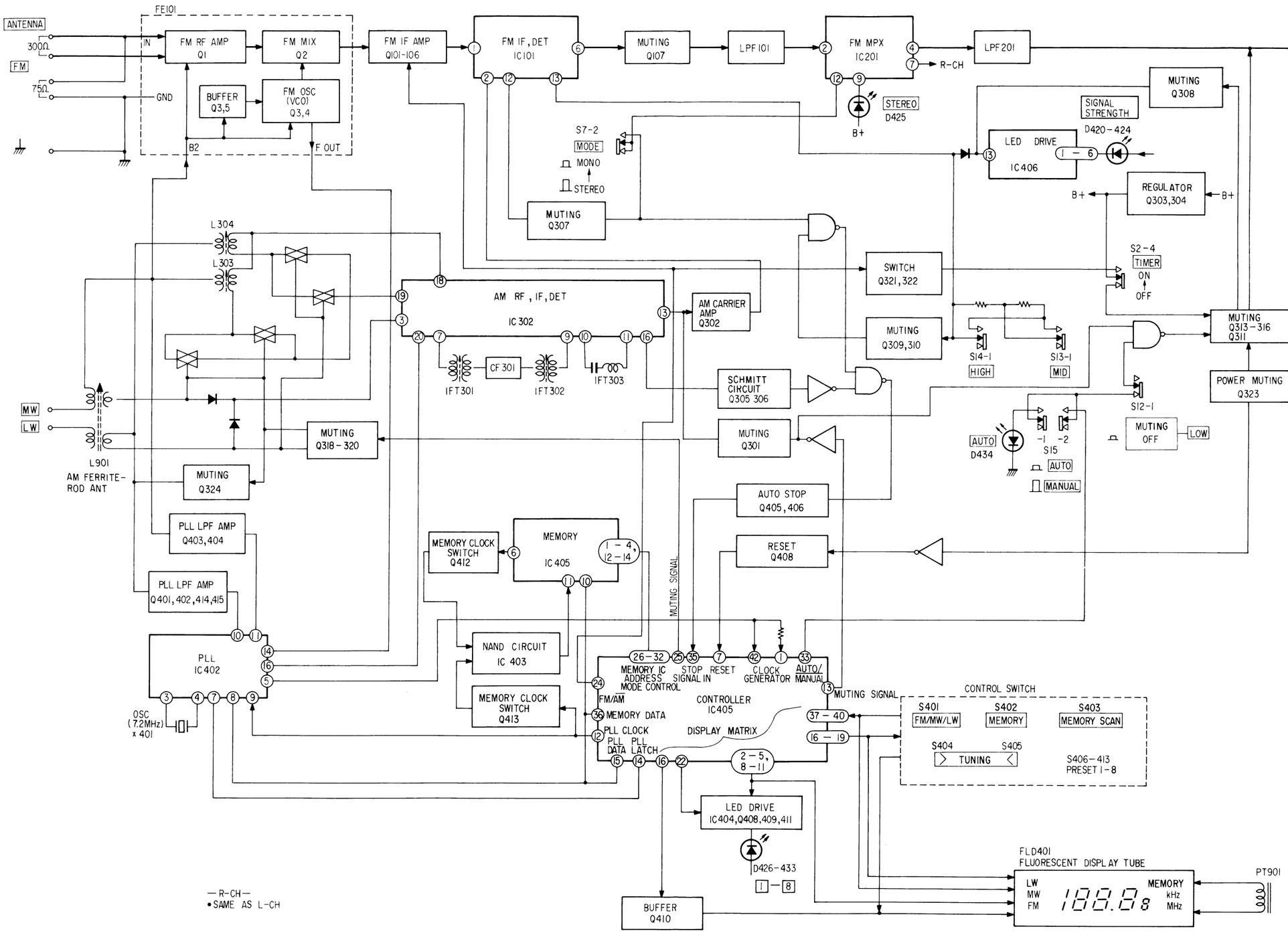
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM

– Audio Amp and Power Supply Sections –



— Tuner Section —



— R-CH —
• SAME AS L-CH

Outline of μPD553C-065 (IC401):

This is a four-bit control microcompeter composed of ALU, ROM, RAM, I/O Ports and control circuit all of which are processed in four-bit parallel manner and are included on a small single chip.

P-channel MOS
ROM (1000 x 8-bits)
RAM (64 x 4-bits)

Input Ports A and B	four-bits each except for Port I which is three bits
Input/output Ports C and D	
Output Ports E, F, G, H and I	

Clock Frequency: 360 kHz

Input signal is obtained from terminal 5 of the divider output in PLL CX778.

42-pin Plastic Dual-in-Line Package

I/O Ports:

Table 1

Port	Terminal	Function
PA_0	33	AUTO/$\overline{\text{MANUAL}}$
PA_1	34	N/A
PA_2	35	Input for AUTO TUNING stop signal
PA_3	36	Input for memory IC's data
PB_{0-3}	37 – 40	Refer to Fig. 1.
PC_{0-3}	2 – 5	
PD_{0-3}	8 – 11	
PF_{0-3}	16 – 19	
PG_0	22	
PG_1	23	N/A
PG_2	24	FM/$\overline{\text{AM}}$
PG_3	25	Output for muting pulse
PE_0	12	Clock output for PLL memory IC
PE_1	13	Output for muting pulse
PE_2	14	Output for PLL
PE_3	15	Output for PLL and memory IC
PH_0	26	Outputs for memory IC address
PH_1	27	
PH_2	28	
PH_3	29	
PI_0	30	→ C1
PI_1	31	→ C2
PI_2	32	→ C3

Outputs for memory IC mode control

MEMORY IC CX761A (IC405)

Outline of CX761A:

(a) This is a non-volatile memory IC. Has 228 (14 words x 16 bits + 4 bits) non-volatile memory transistors built in, and works for reading, erasure and writing the data word.
(b) Because of being a non-volatile type memory, this IC maintains the memorized informations for a long time without a battery back-up after the power switch is turned off.
(c) Word address is done by the BCD inputs.
(d) Silicon-type P-channel enhancement MNOS IC construction.
(e) 14-pin molded DIP casing.

Refer to the schematic diagram for the block diagram.

Table 2. Function of Terminals:

Terminal	IN or OUT	Function
1	IN	Word address D
2	IN	Word address C
3	IN	Word address B
4	IN	Word address A
5	IN	Power supply input
6	IN/OUT	Writing and erasure control inputs/memory-BUSY output
7	IN	Power supply input
8	IN/OUT	Inputs and outputs for test checkout
9	IN	Test signal
10	IN/OUT	Combined data inputs and data outputs
11	IN	Input for synchronous clock
12	IN	Input for mode control C3
13	IN	Input for mode control C2
14	IN	Input for mode control C1

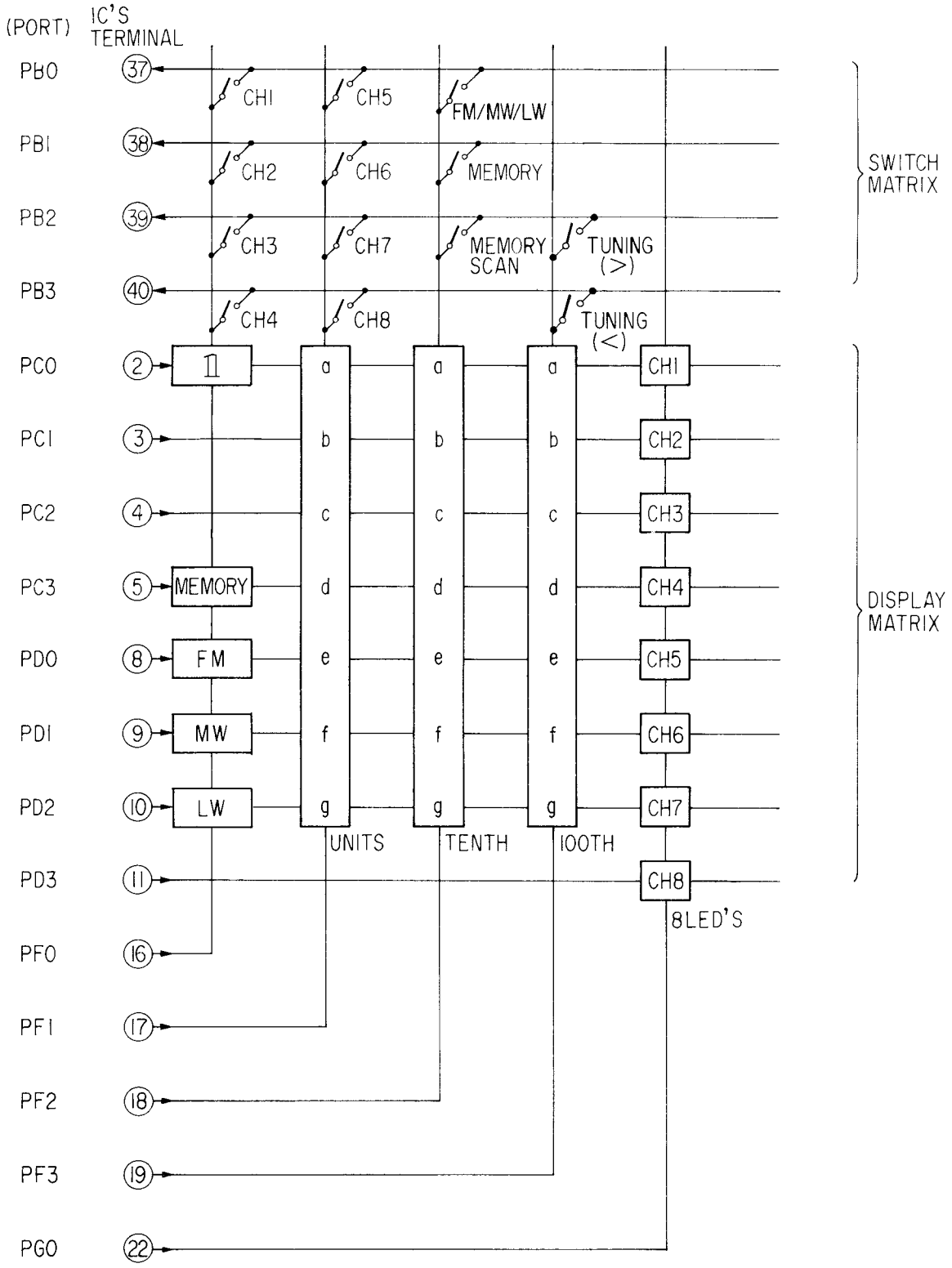

(PORT)
IC'S TERMINAL
PB0
PB1
PB2
PB3
PC0
PC1
PC2
PC3
PD0
PD1
PD2
PD3
PF0
PF1
PF2
PF3
PG0
37
38
39
40
2
3
4
5
8
9
10
11
16
17
18
19
22
CH1
CH5
FM/MW/LW
CH2
CH6
MEMORY
CH3
CH7
MEMORY SCAN
TUNING (>)
CH4
CH8
TUNING (<)
SWITCH MATRIX
DISPLAY MATRIX
MEMORY
FM
MW
LW
a
b
c
d
e
f
g
UNITS
TENTH
100TH
CH1
CH2
CH3
CH4
CH5
CH6
CH7
CH8
8LED'S

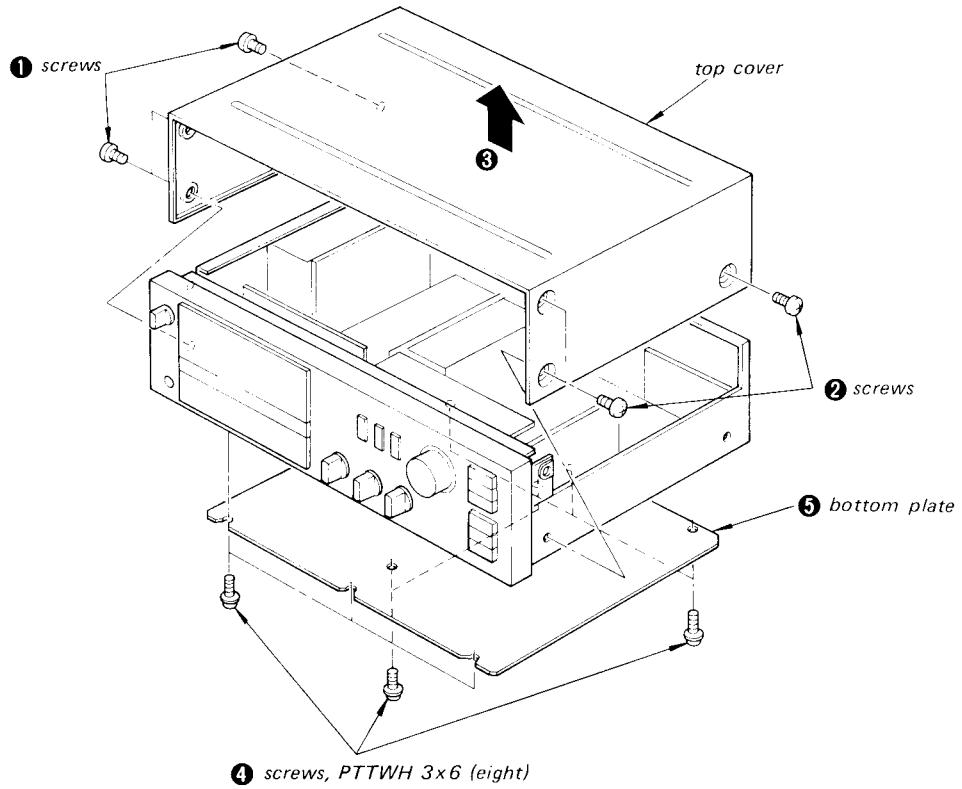
Fig. 1

SECTION 2
DISASSEMBLY

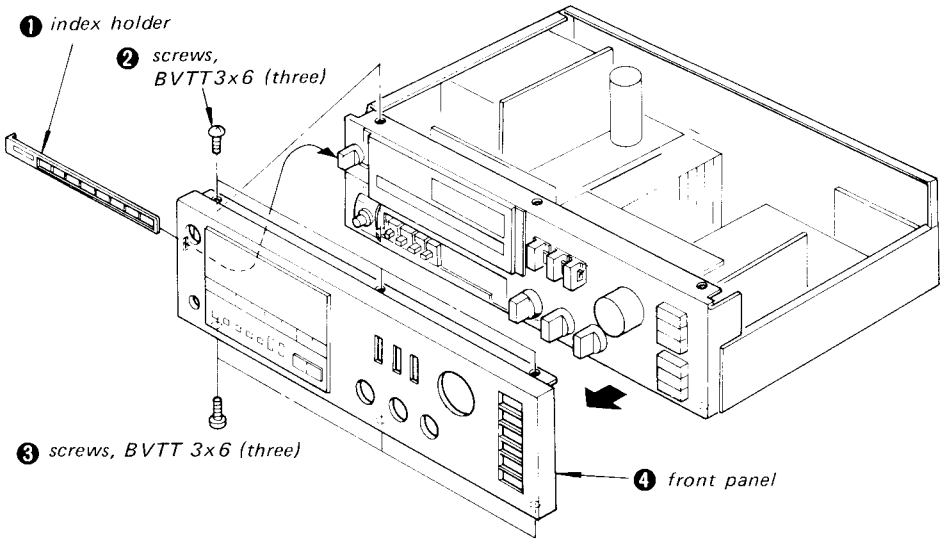
Note: Follow the disassembly procedure in the numerical order given.

TOP COVER AND BOTTOM PLATE REMOVAL

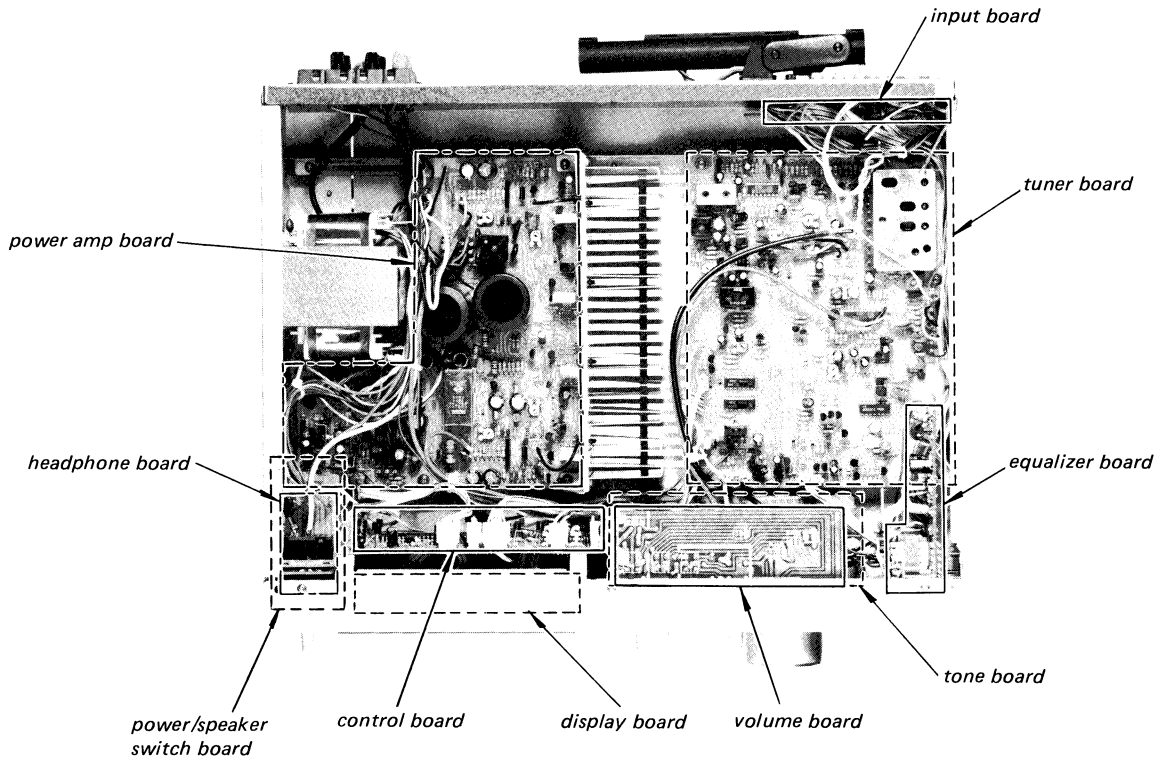
Note: Circuit-board checkouts and adjustments can be made after this removal.



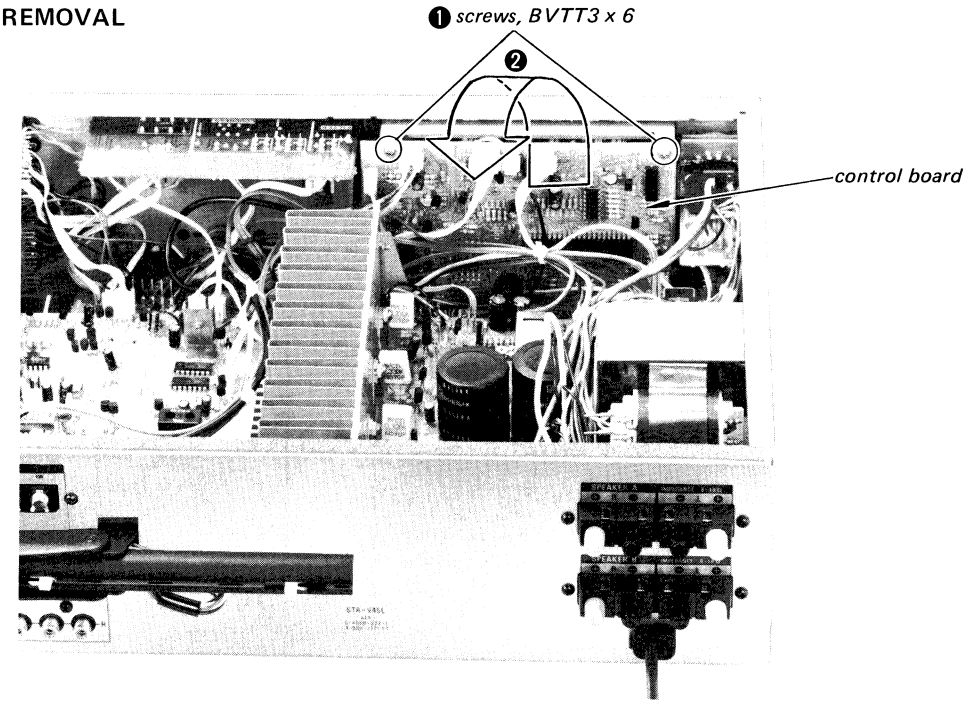
FRONT PANEL REMOVAL



CIRCUIT BOARDS LAYOUT



CONTROL BOARD REMOVAL

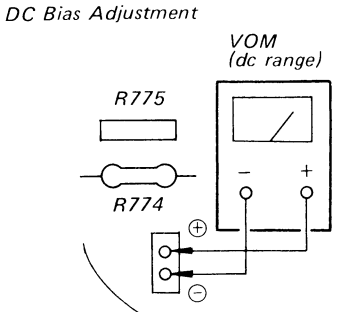


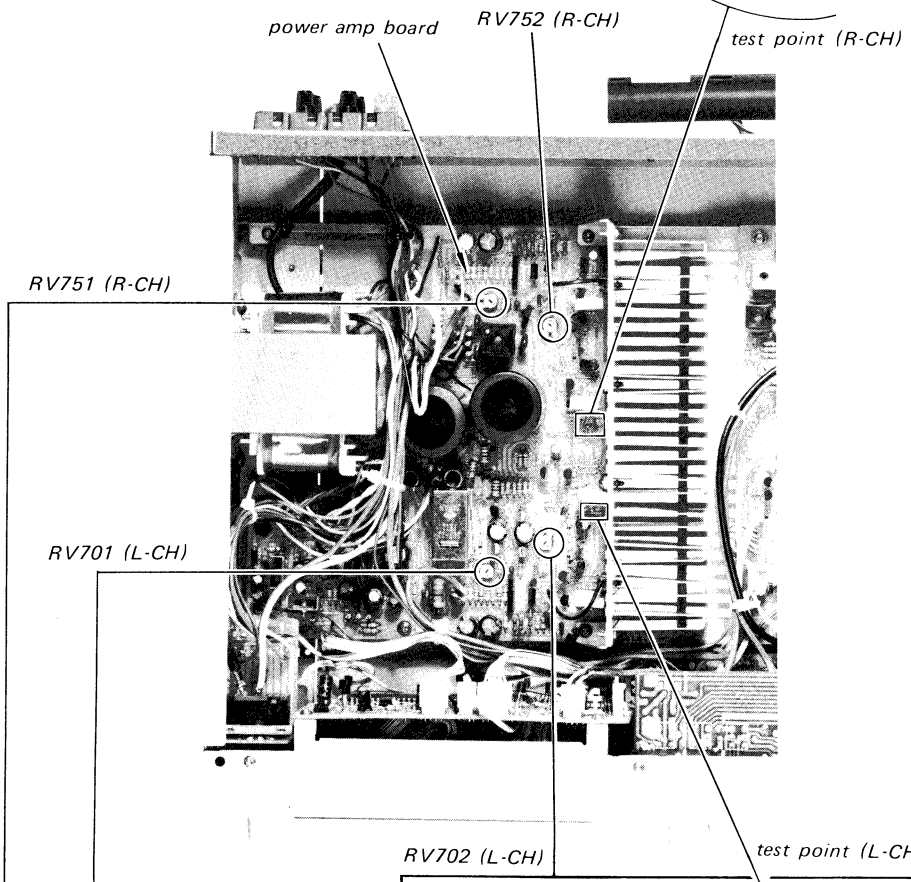
SECTION 3
ADJUSTMENTS

3-1. AMP SECTION

Note:

1. DC bias and DC balance adjustments should be made several minutes later after the POWER switch is turned on (POWER ON).
2. Make DC bias adjustment first.
3. Repeat DC bias and DC balance adjustments two or three times.
4. After replacing the power transistors, DC bias and DC balance adjustments should be made.

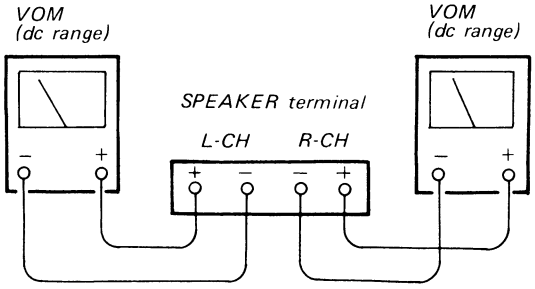




DC Balance Adjustment
(With no signal input)

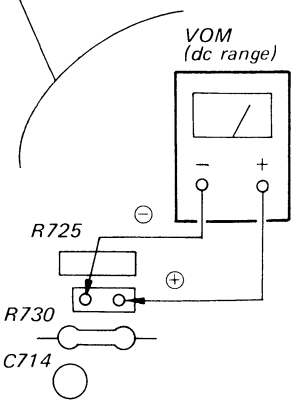
–L-CH–
Adjust RV701 for 0 V dc reading on VOM.

–R-CH–
Adjust RV751 for 0 V dc reading on VOM.



DC Bias Adjustment
(With no signal input)

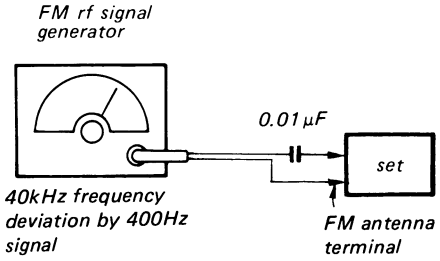
–L-CH–
Adjust RV702 for 10 mV dc reading on VOM.

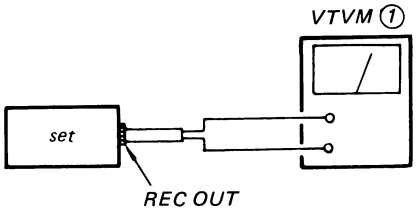


–R-CH–
Adjust RV752 for 10 mV dc reading on VOM.

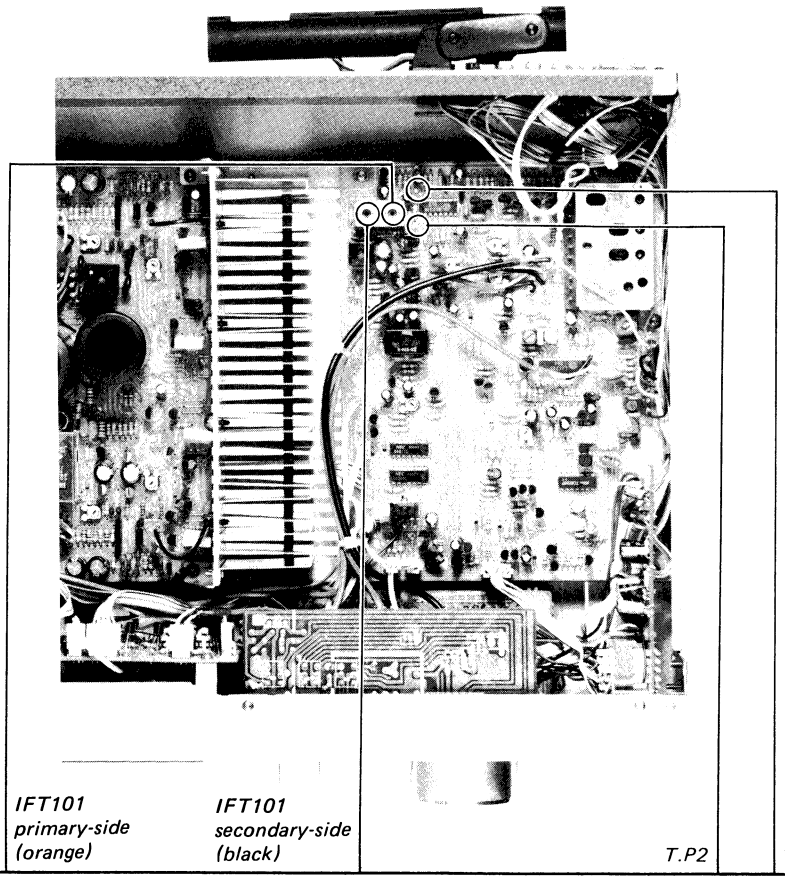
3-2. FM SECTION

FM stereo standard signal		FM monaural standard signal	
Carrier frequency:	*98 MHz*	*Carrier frequency:*	*98 MHz*
Modulation:	*Audio 400Hz* *16.25kHz deviation* *Sub channel 38kHz,* *16.25kHz deviation* *Pilot signal 19kHz,* *7.5kHz deviation*	*Modulation:*	*400 Hz,* *40kHz deviation (100%)*





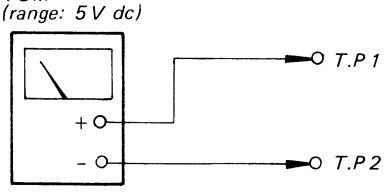
- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.



FM DISCRIMINATOR (IFT101) ALIGNMENT 1 (PRIMARY-SIDE)

Setting:

FUNCTION switch: TUNER
FM/MW/LW switch: FM
MODE switch: MONO
TUNING switch: Detuned position



Procedure:

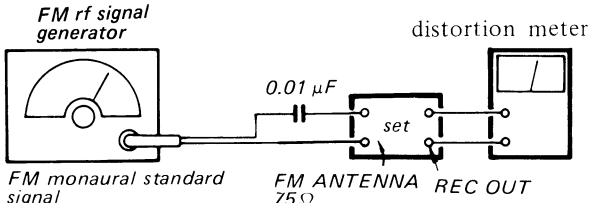
1. Tune the set to 98MHz.
2. Adjust the orange core (primary-side) of IFT101 for 0V reading on VOM.

Note: When replacing the ceramic filters (CF101–CF104), perform this alignment.

FM DISCRIMINATOR (IFT101) ALIGNMENT 2 (SECONDARY-SIDE)

Setting:

FUNCTION switch: TUNER
FM/MW/LW switch: FM
MODE switch: MONO



Carrier frequency: *98MHz*
Output level: *1mV (60dB)*
Modulation: *400Hz, 40kHz deviation (100%)*

Procedure:

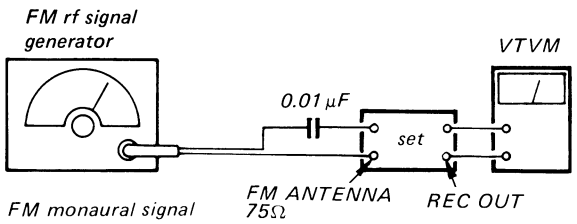
1. Tune the set to 98MHz.
2. Adjust the black core (secondary-side) of IFT101 for minimum distortion.

Note: Repeat the primary-side and secondary-side alignments several times.

FM MUTING LEVEL ADJUSTMENT

Setting:

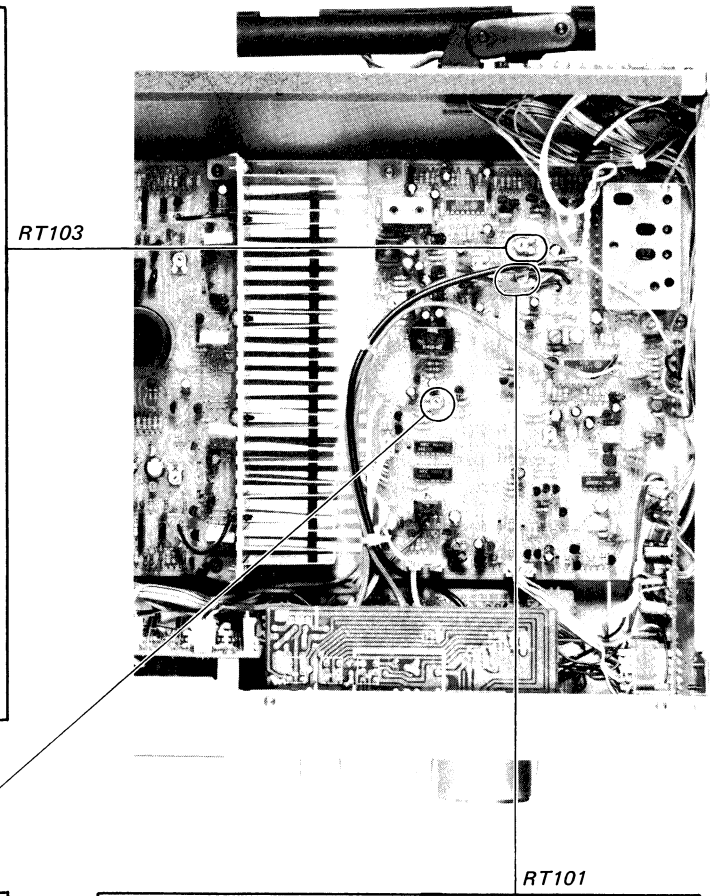
TUNING LEVEL-LOW switch: ON



FM monaural signal
Carrier frequency: 98MHz
Output level: 5.7μV (15dB)
Modulation: 400Hz, 40kHz deviation (100%)
Output level: 5.7μV (15dB)

Procedure:

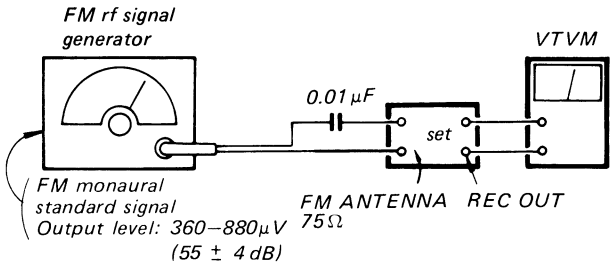
1. Push TUNING switches and tune the set to 98 MHz.
2. Turn RT103 and set it at the point just when the VTVM indication drops to 0 V.



FM TUNING LEVEL ADJUSTMENT

Setting:

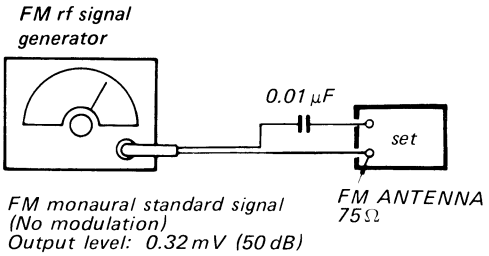
TUNING LEVEL-HIGH switch: ON

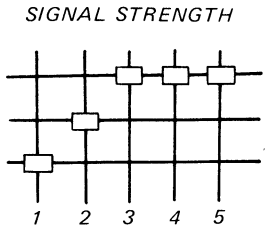


Procedure:

By varying the output level of the FM signal generator from 360μV (51 dB) to 880μV (59 dB), adjust RT102 so that the frequency scanning stops (observing the frequency counter of the set).

SIGNAL INDICATOR ADJUSTMENT





Procedure:

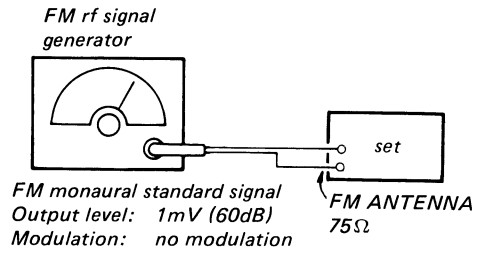
1. Tune the set to 98MHz.
2. Adjust RT101 for all five LEDs of SIGNAL STRENGTH indicator lighting.

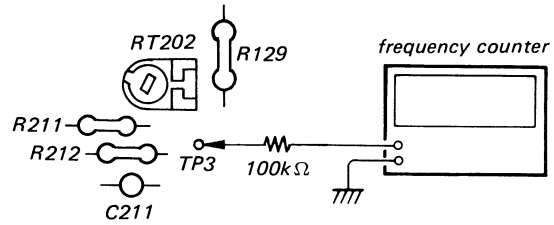
VCO ADJUSTMENT

Setting:

FUNCTION switch: TUNER
FM/MW/LW switch: FM
MODE switch: MONO

A) Regular Method





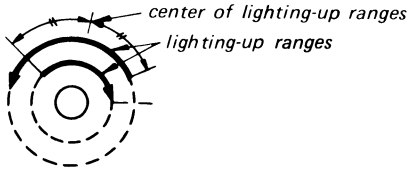
Procedure:

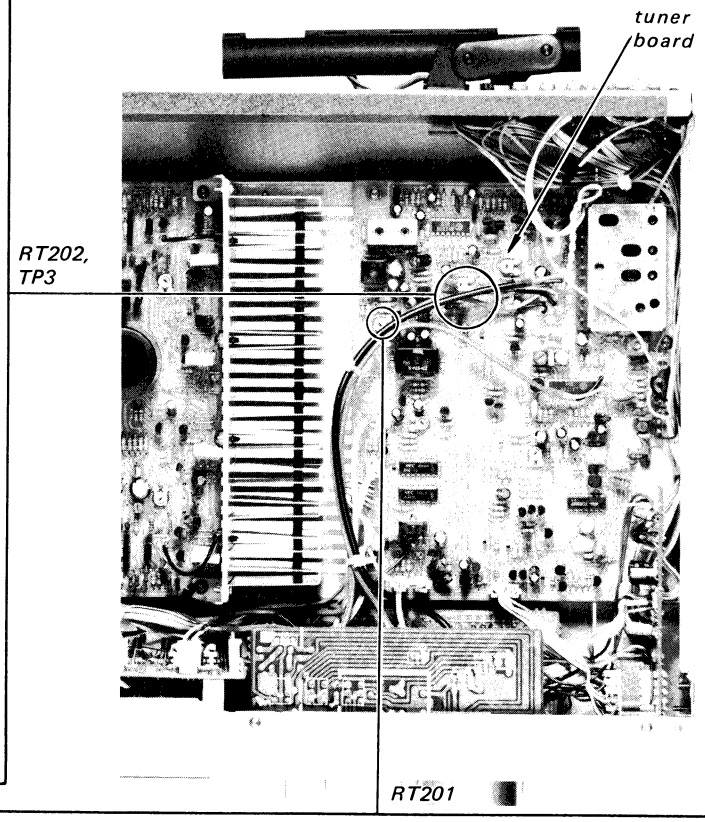
1. Tune the set to 98MHz.
2. Adjust RT202 for 76kHz ±100Hz reading on the frequency counter.

B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RT202 clockwise or counterclockwise and memorize the lighting-up ranges of STEREO lamp.
3. Secure RT202 at the center of the lighting-up range of both turns as shown below.

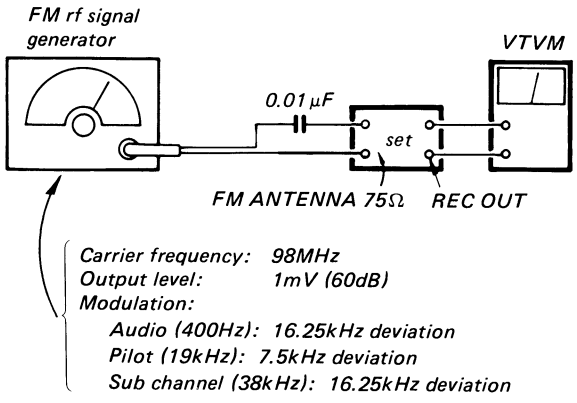




FM STEREO SEPARATION ADJUSTMENT

Setting:

FUNCTION switch: TUNER
FM/MW/LW switch: FM
MODE switch: STEREO/FM-AM MUTING



Procedure:

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RT301 resistor for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RT301 resistor for minimum reading.

L-CH Stereo Separation: Ⓐ – Ⓑ
R-CH Stereo Separation: Ⓒ – Ⓓ

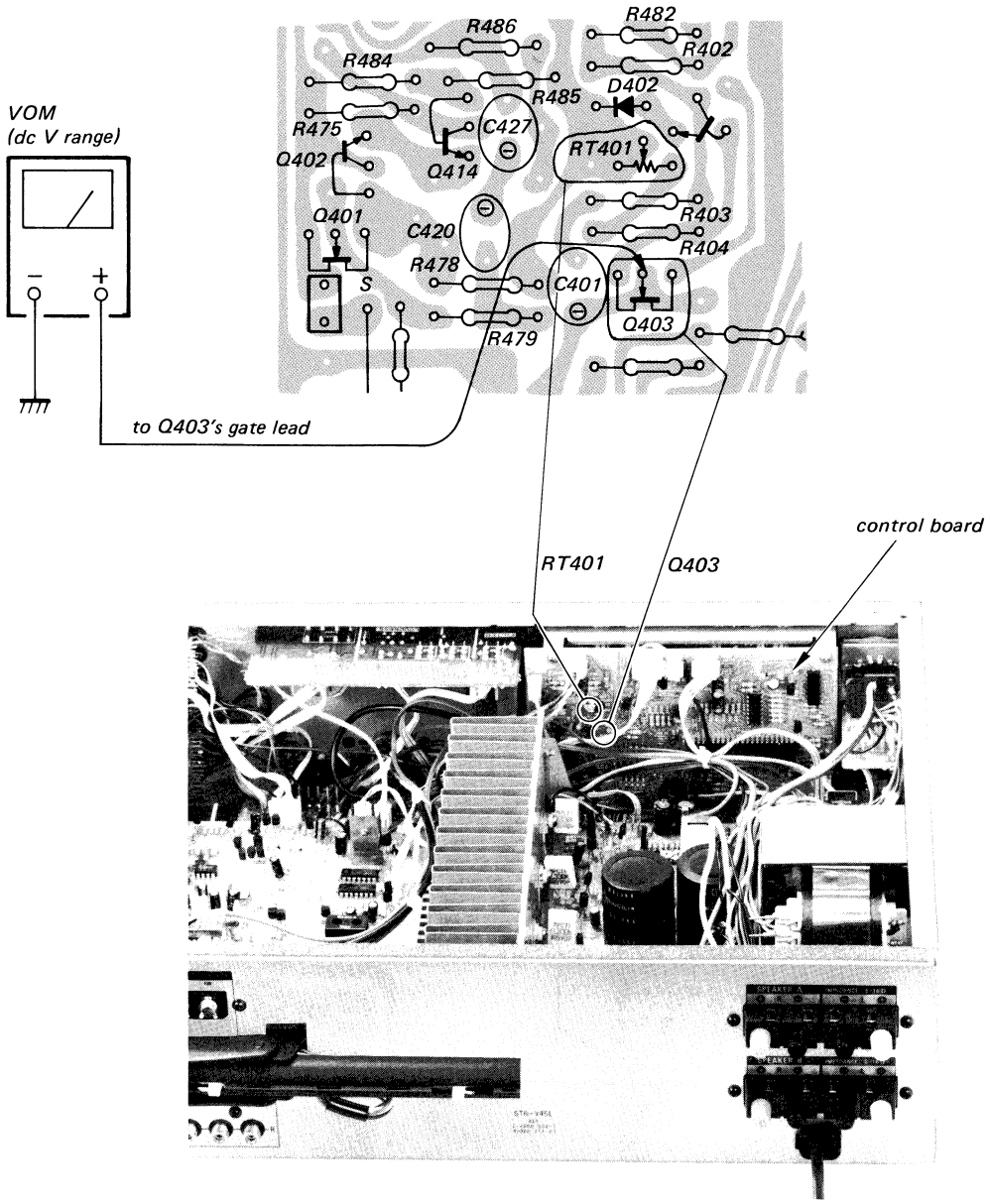
The separations of both channels should be equal.

PLL ADJUSTMENT

Setting:

FM/MW/LW switch: FM

Setting Up and Adjustment Location:



Procedure:

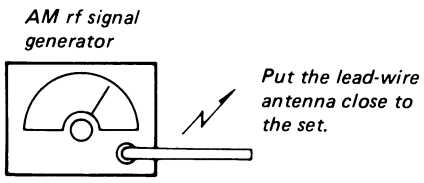
1. Tune the set to 98MHz.
2. Turn RT401 to its clockwise stop.
3. Turn RT401 counterclockwise to obtain 1.8V dc at the gate lead of Q403.

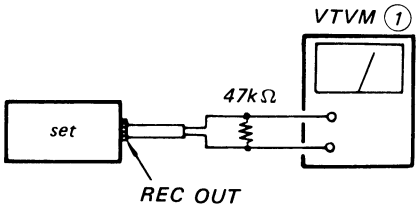
3-3. AM SECTION

MW Section

Setting:

FUNCTION switch TUNER
FM/MW/LW switch: MW

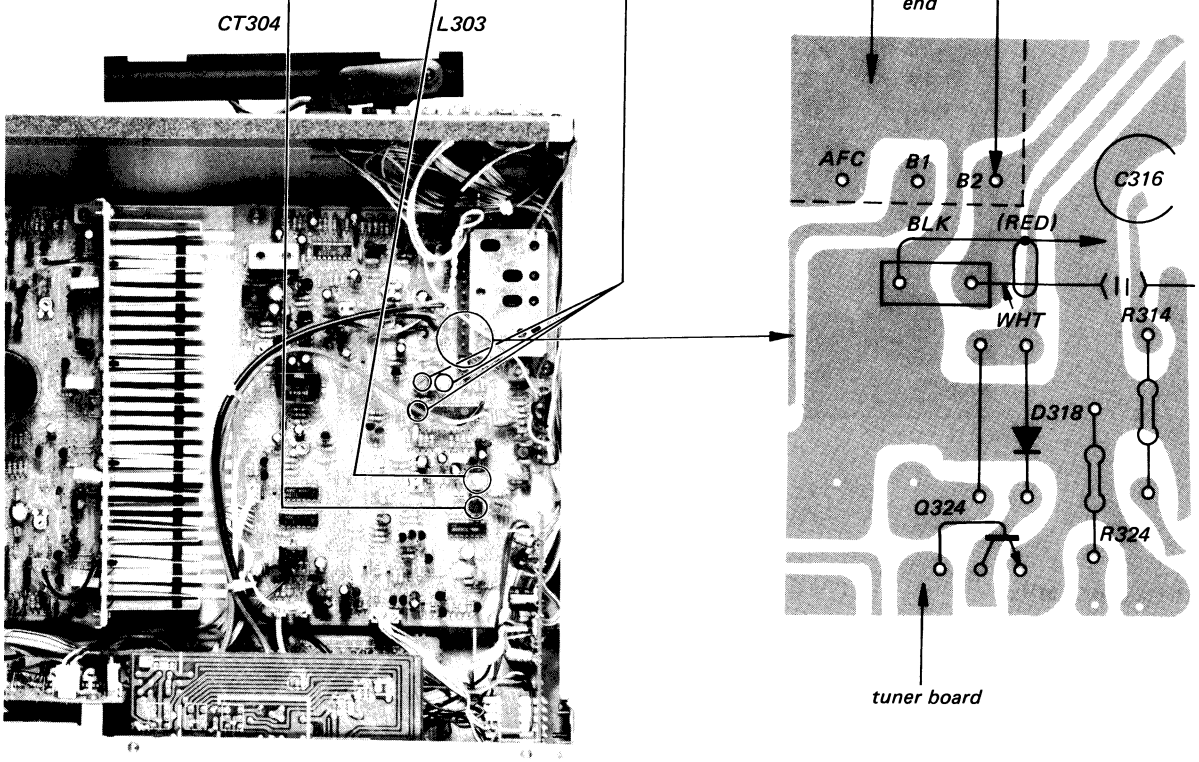


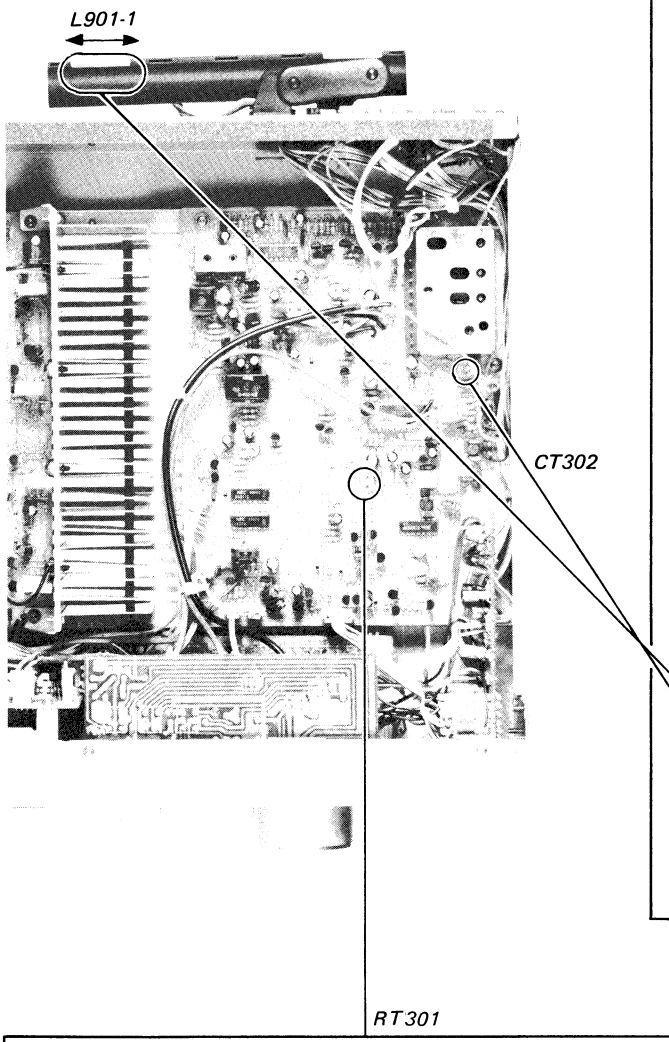


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

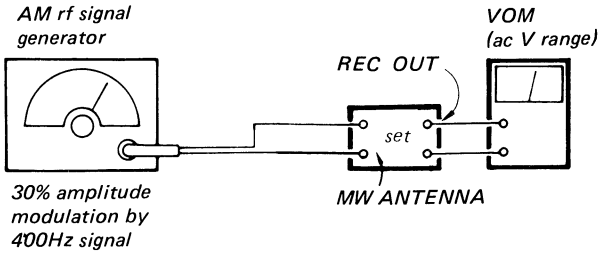
AM I-F ALIGNMENT
When IFT301 through 303 are replaced, they do not need readjustment since they have been factory-adjusted.

MW FREQUENCY COVERAGE ADJUSTMENT		
Frequency Dial Indication	1,602kHz	522kHz
VOM reading	22V	1.5V
Adjust	CT304	L303





MW TRACKING ADJUSTMENT



Output level: *30 – 100μV (30 – 40dB)*
Carrier frequency: *603kHz or 1,404kHz*

Procedure:

Tune the set to the frequency of AM rf signal generator and adjust L901-1 and CT302 for maximum reading on the VOM.

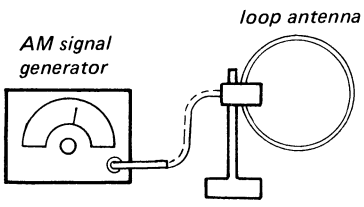
	AM Rf Signal Generator Frequency	Adjust	VOM Reading
1	603kHz	L901-1	maximum
2	1,404kHz	CT302	

Note: Repeat the above adjustment several times ending with CT302.

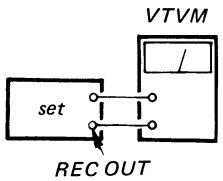
TUNING LEVEL ADJUSTMENT

Setting:

TUNING LEVEL LOW switch: ON



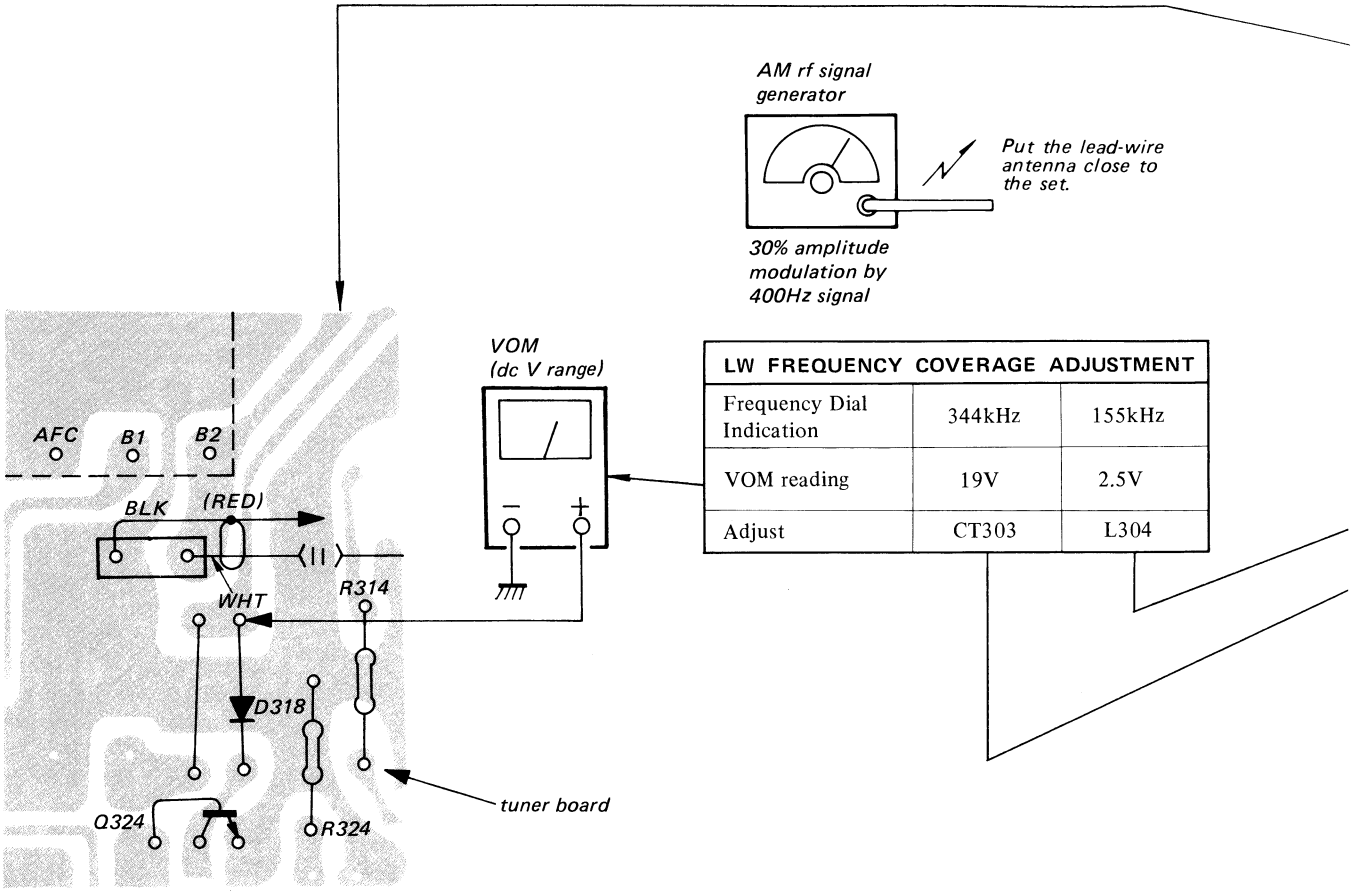
Carrier frequency: *1,000kHz*
Output level: *0.02V (86dB)*
Modulation: *400Hz, 30%*



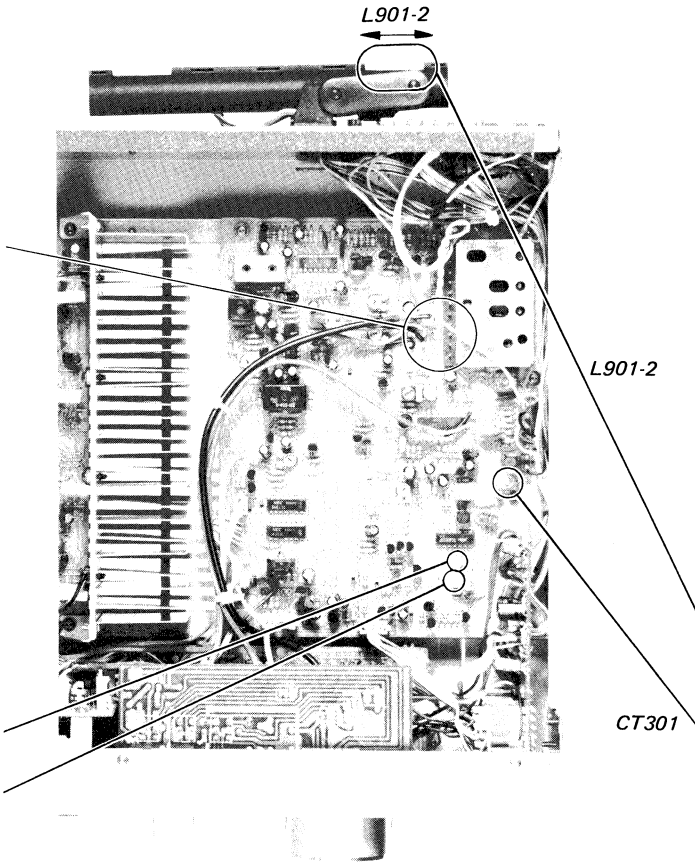
Procedure:

1. Place the loop antenna at a distance of 60cm (23⅝") away from the ferrite-rod antenna in the set.
2. Turn RT301 until the VTVM indication drops to 0V with the output level of AM signal generator of 86 ± 4dB.

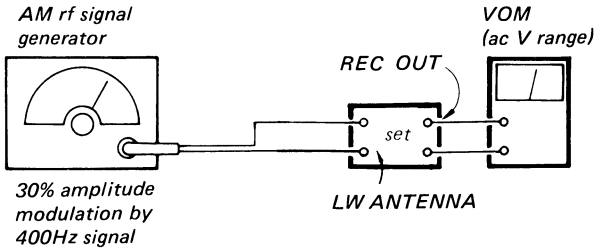
LW Section



LW FREQUENCY COVERAGE ADJUSTMENT		
Frequency Dial Indication	344kHz	155kHz
VOM reading	19V	2.5V
Adjust	CT303	L304



LW TRACKING ADJUSTMENT



Output level: *30 – 100μV (30 – 40dB)*
Carrier frequency: *173kHz or 308kHz*

Procedure:

Tune the set to the frequency of AM rf signal generator and adjust L901-2 and CT301 for maximum reading on the VOM.

	AM Rf Signal Generator Frequency	Adjust	VOM Reading
1	173kHz	L901-2	maximum
2	308kHz	CT301	

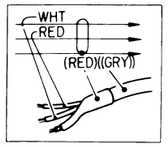
Note: Repeat the above adjustment several times ending with CT301.

A B C D E F G H

1 2 3 4 5

Note:

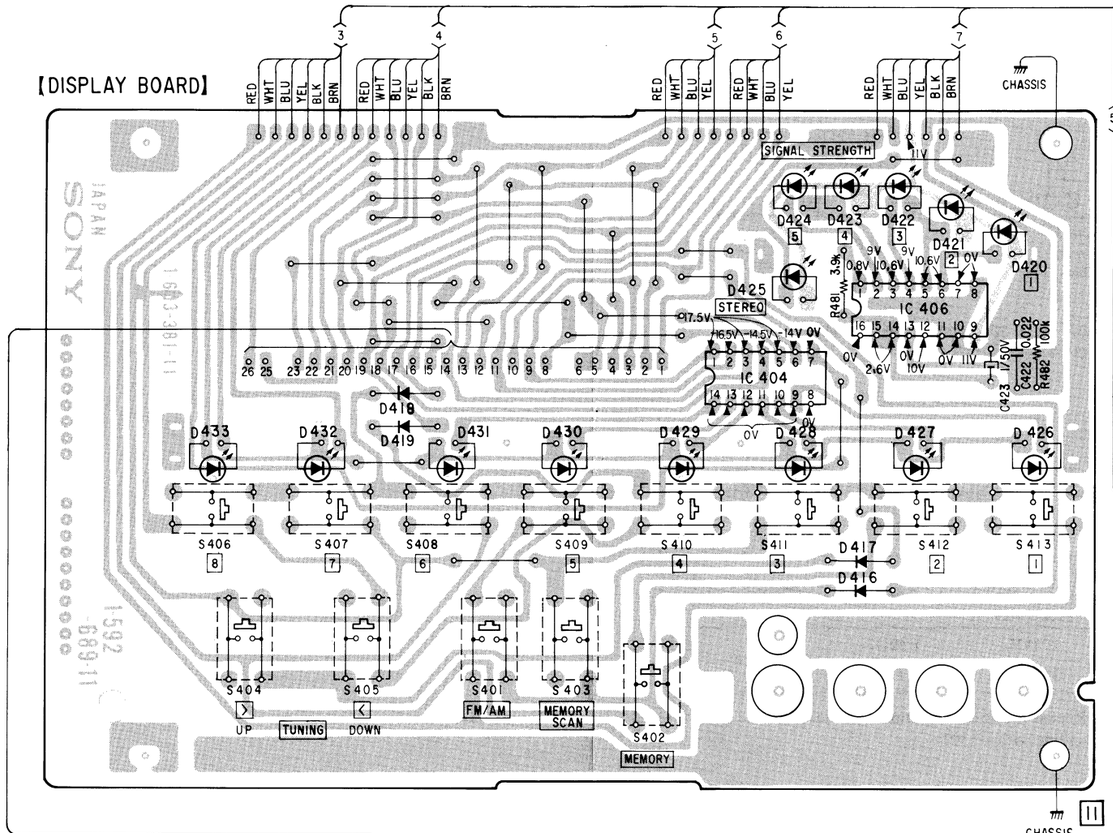
- Color code of sleeving over the end of the jacket.



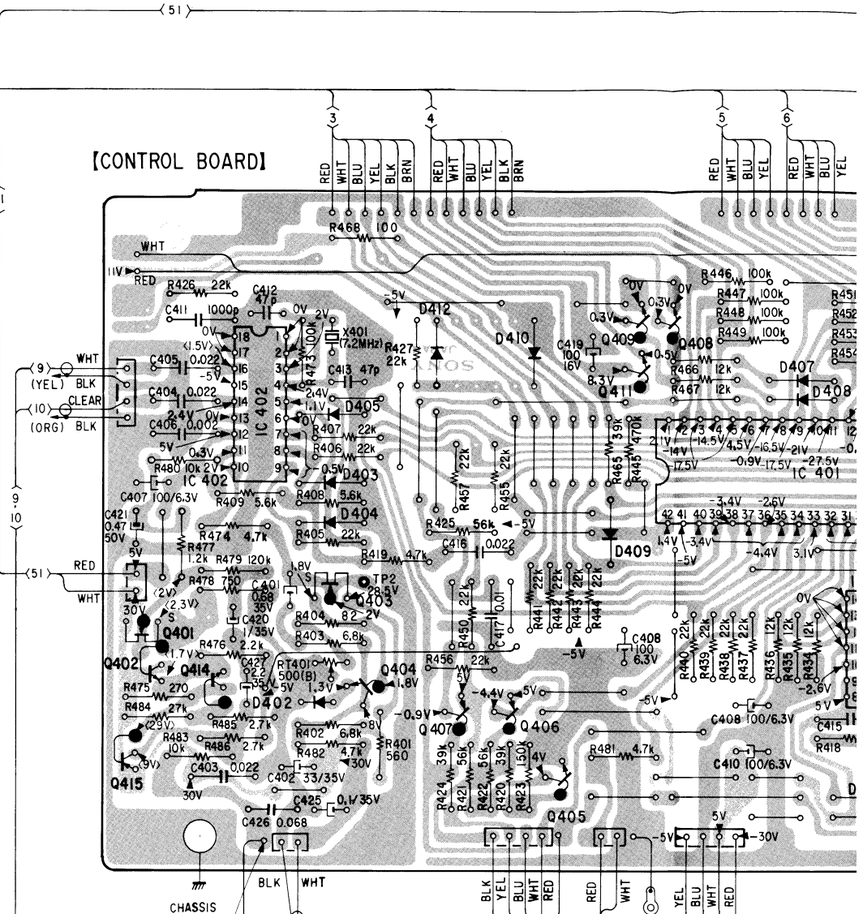
- [ ]—: indicates side identified with part number.
- : B + pattern

- ▬▶▬ : signal path
- ▬▶ : L-CH signal path
- ▬·▬▶ : R-CH signal path

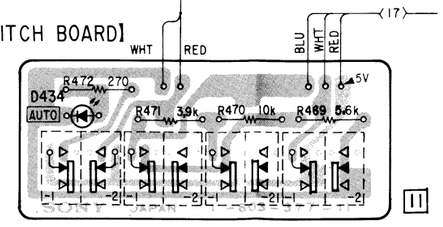
【DISPLAY BOARD】

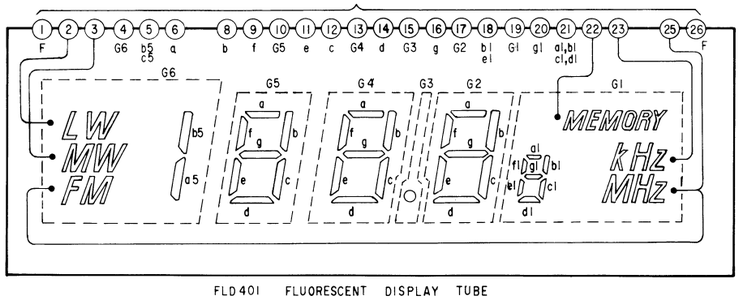


【CONTROL BOARD】



【SWITCH BOARD】





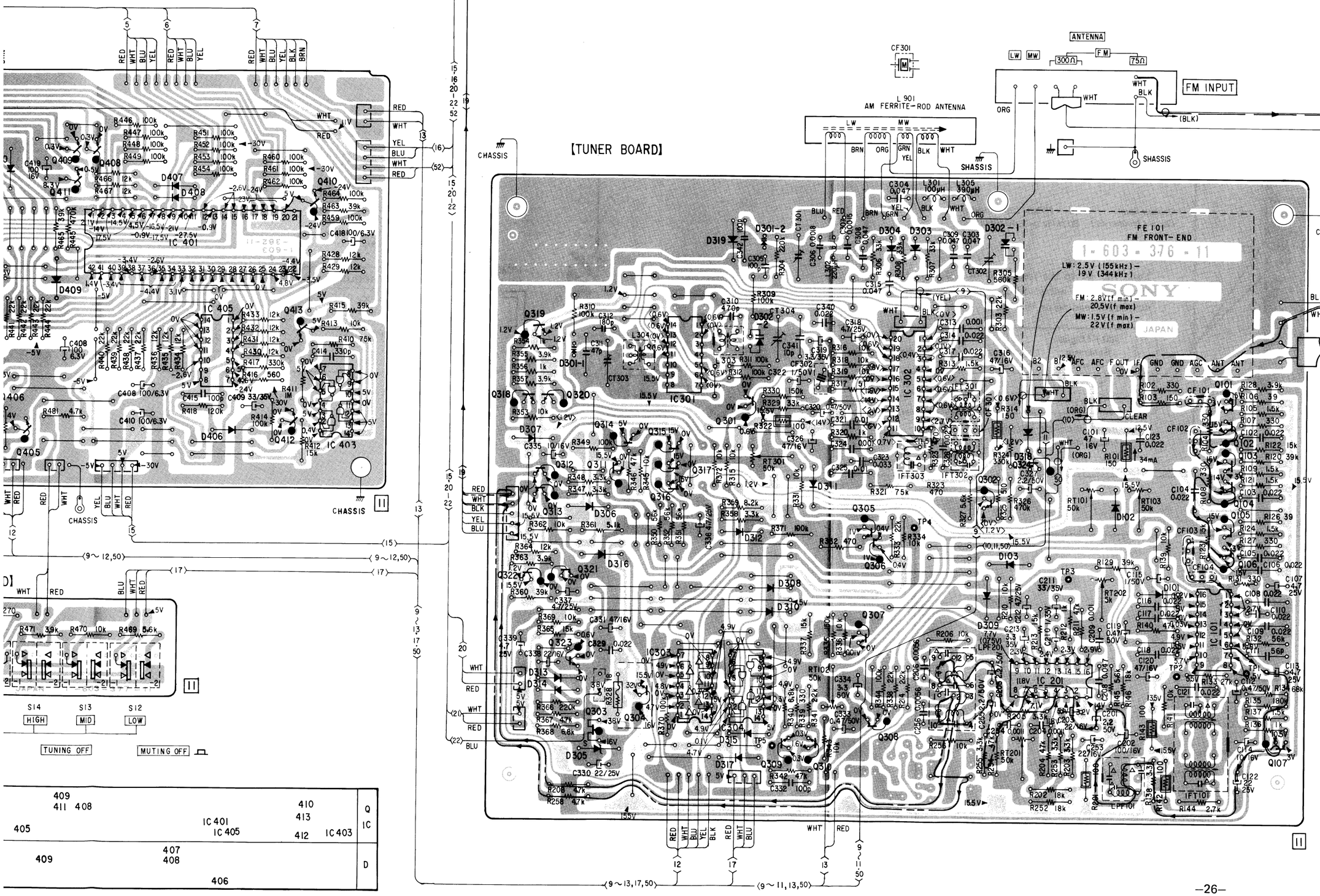
FLD401 FLUORESCENT DISPLAY TUBE

| | | |

H I J K L M N O P

1 2 3 4 5

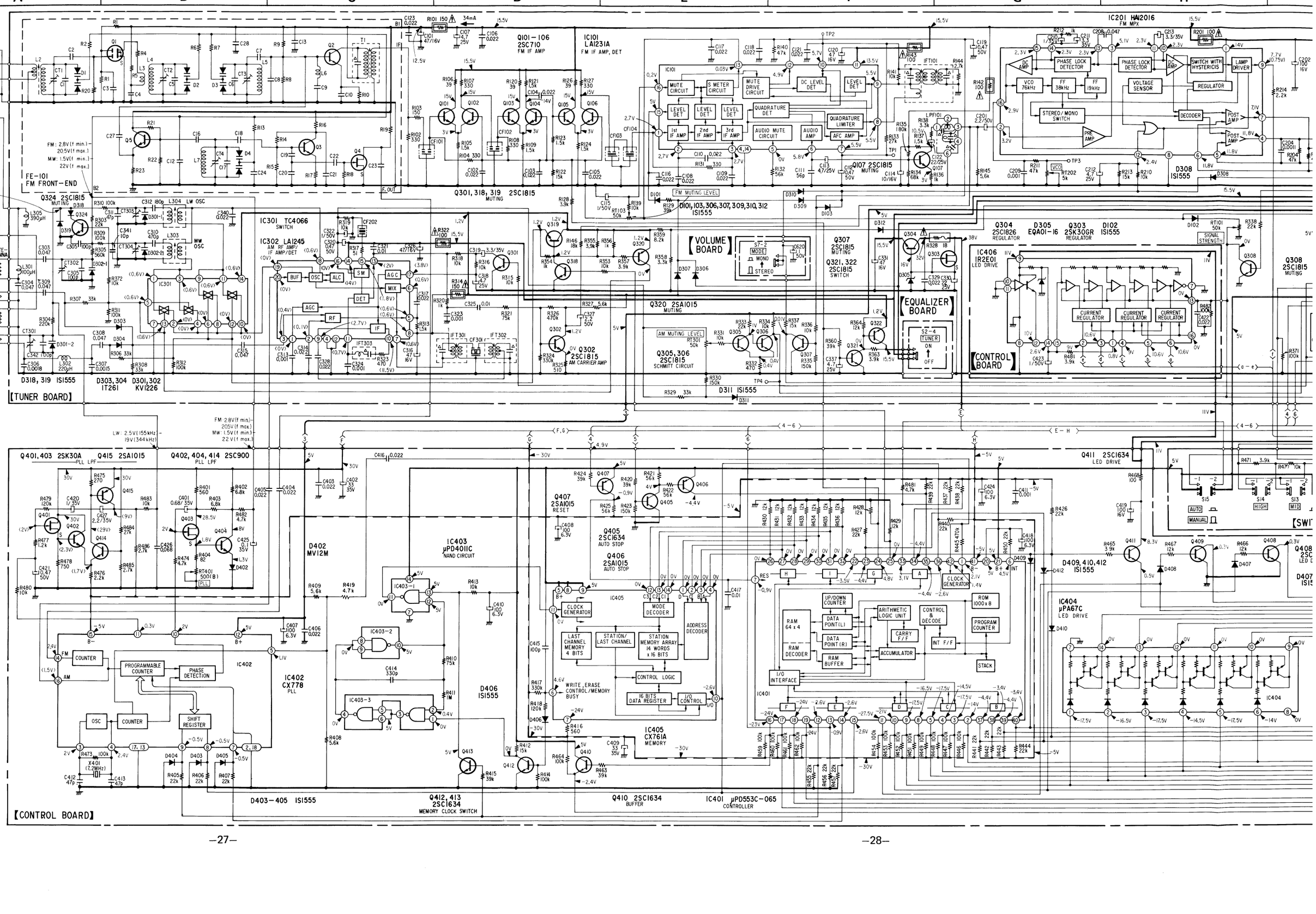
【TUNER BOARD】

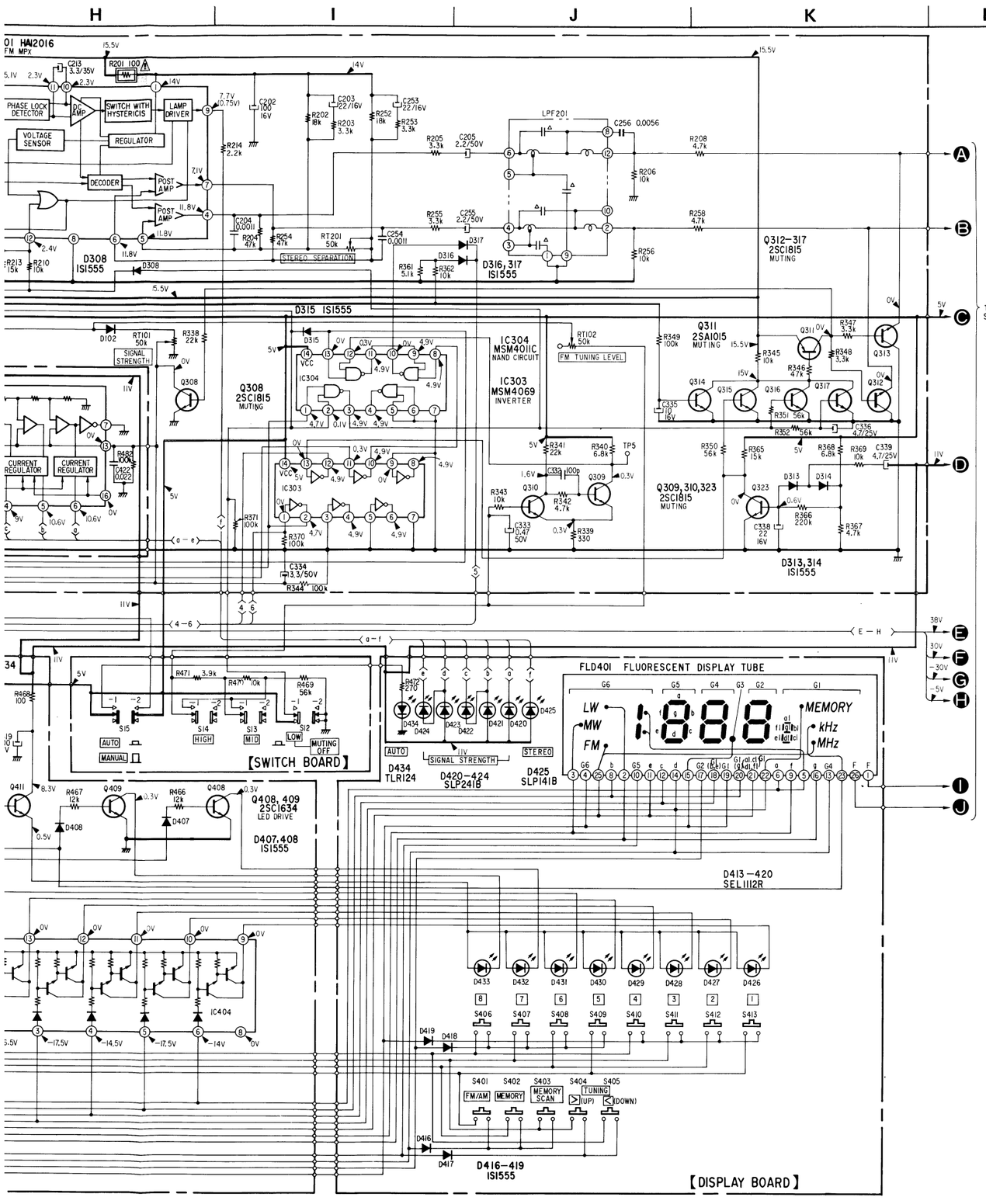


Q IC	D
	301-2 319 302-1 304,303
	302-2 301-1
319 318 320 IC301 IC302 101 301	
102	307 318
314 315 312,311,317 103 324	
316 104 313 302	311 306 102
305 306 105	312
106	316 103
321 322	308,309 101 310
IC101 307 IC201 IC303 IC304	313 314
323 IC304 303 308	
309,310 107	315
325	325 317

Q IC	409 411 408	405	IC401 IC405	410 413 412	IC403
D	407 408 409	406			

4-2. SCHEMATIC DIAGRAM — Tuner Section —





Note:

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- – – – : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- Readings are taken under no-signal (detuned) conditions with a VOM (20kΩ/V).

  [[ ]] : FM STEREO
  〈 〉 : AM
  no mark : FM
- ▭ : signal path

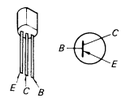
- Switch

Ref. No.	Switch	Position
S2	FUNCTION TUNER	OFF
S7	MODE	STEREO
S12–15	TUNING LEVEL	MANUAL
S401	FM/MW/LW	FM
S402	MEMORY	OFF
S403	MEMORY SCAN	OFF
S404	TUNING (UP)	OFF
S405	TUNING (DOWN)	OFF
S406–413	preset (1–8)	OFF

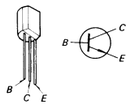
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Semiconductor Lead Layouts:

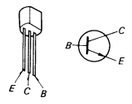
2SA1015



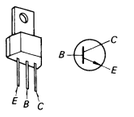
2SC710
2SC710-14



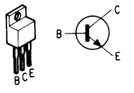
2SC900
2SC1362
2SC1364
2SC1634
2SC1815



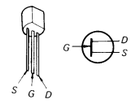
2SC1826



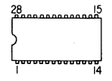
2SC1986



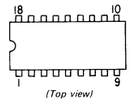
2SK30-GR
2SK30A
2SK30A-GR3



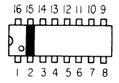
CX761A
μPD553C065



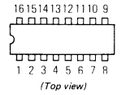
CX778



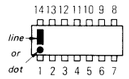
HA12016



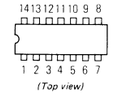
IR2E01
LA1231
LA1231A
LA1245



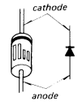
MB84069B
MSM4011C
MSM4069
μPD4011C



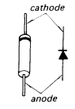
TC4066
μPA67C
μPD4066C



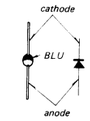
EQA01-16
EQB01-16



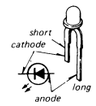
1S1555
1T26
1T261



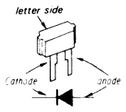
MV12N



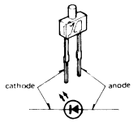
TLR124



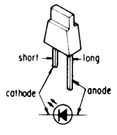
KV1226



SEL1112R

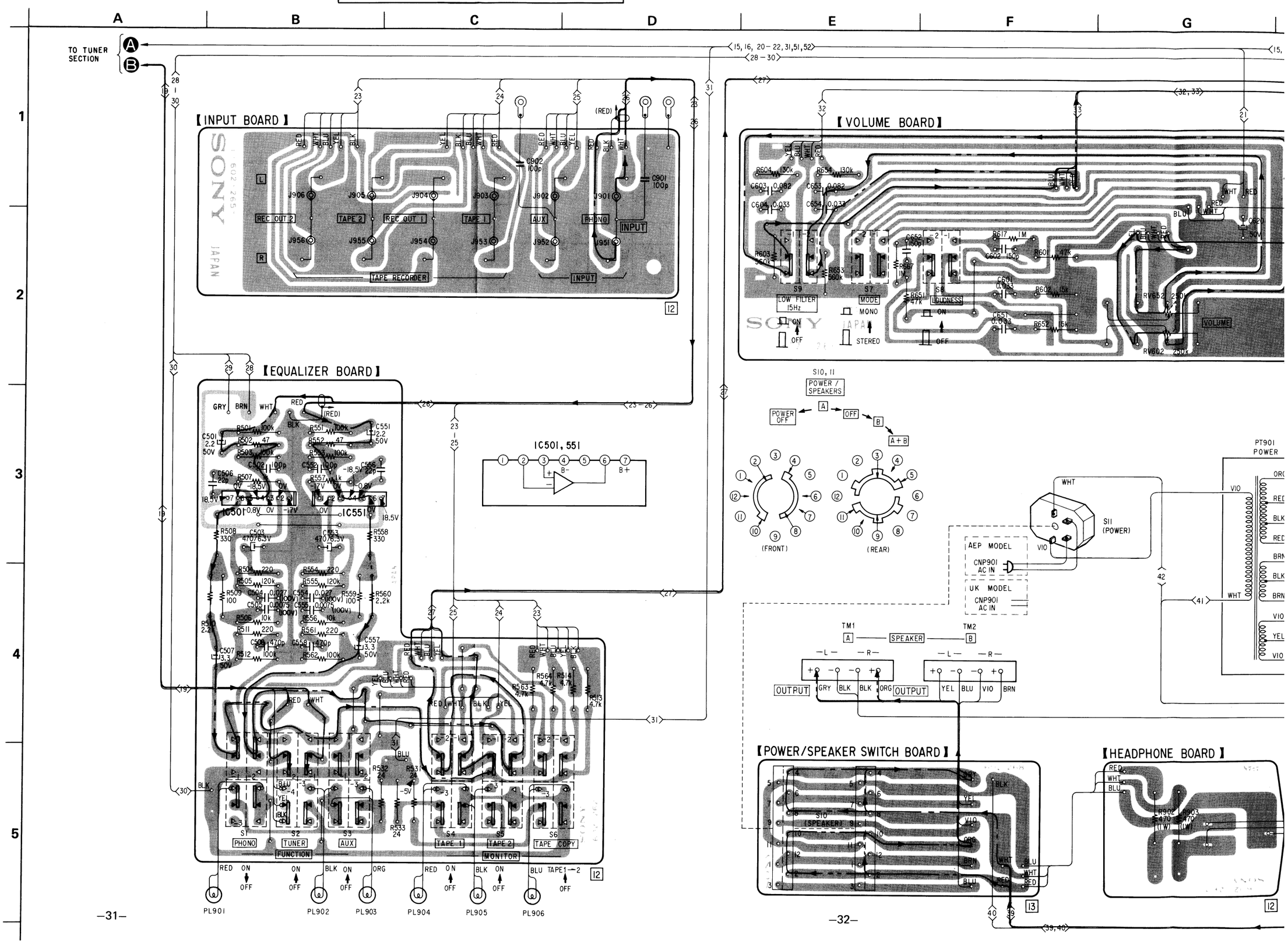


SLP141B
SLP241B



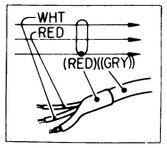
4-3. MOUNTING DIAGRAM — Amp Section —

— Conductor Side —



Note:

- Color code of sleeving over the end of the jacket.



- ▒ : B+ pattern
- ▬▶▬ : signal path
- ▬▪▬▶ : L-CH signal path
- ▬▪▪▬▶ : R-CH signal path

G H I J K L M N

【TONE BOARD】

【POWER AMP BOARD】

【HEADPHONE BOARD】

PT901 POWER

SII (POWER)

CNJ903 HEADPHONES

F801 2A

VOLUME

BALANCE

TREBLE

TONE

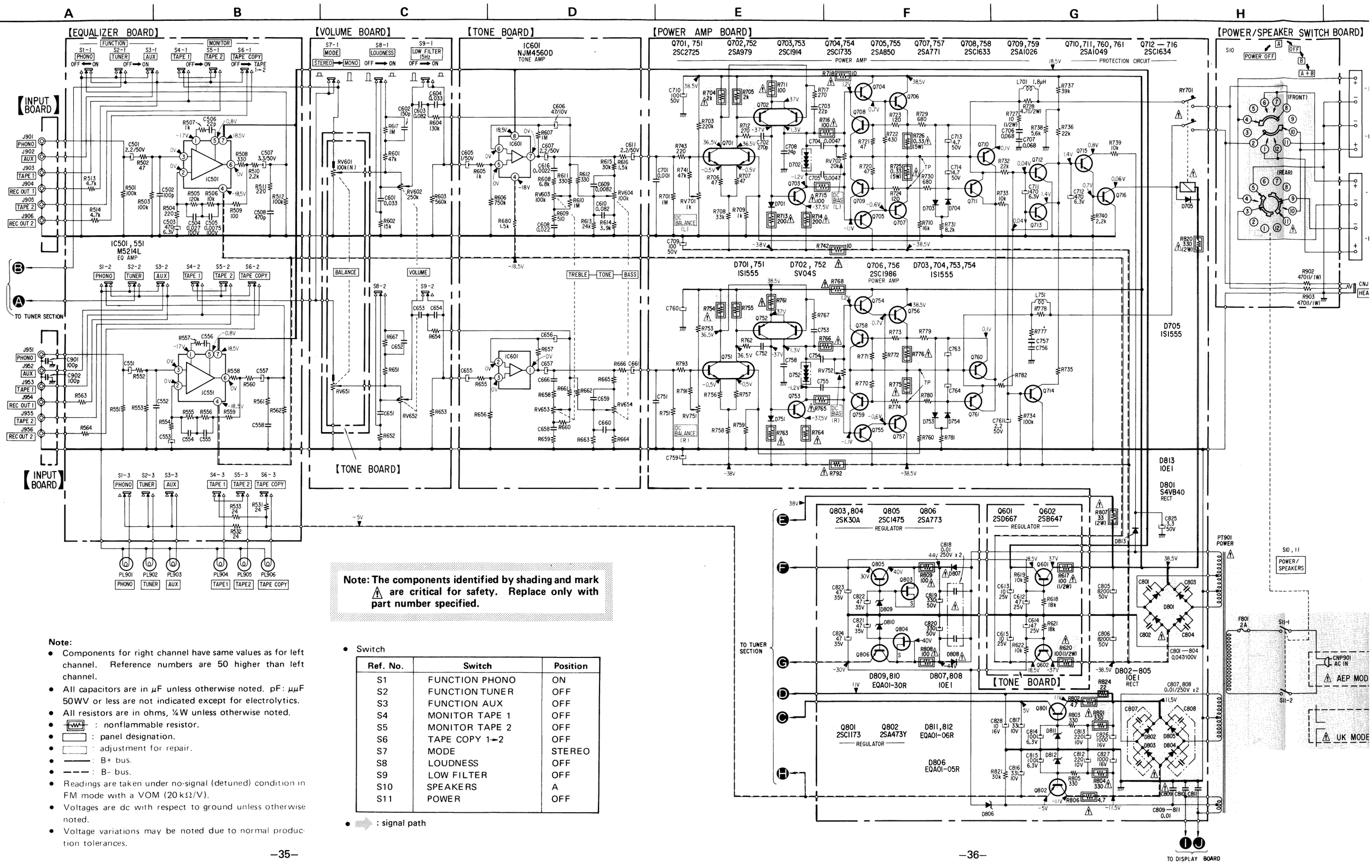
BASS

TP(R-CH)

TP(L-CH)

Q IC	D
	812
601 802 IC601	
	811
602	
801	
	802
	803
	810 806
	805
	804
804,806	
	808
805	809
	807
803	813
	705
	801
716,715	
751 701	
712,713	
752 702	
714	752 702
753 703	751 701
704,708	
755,759	704,703
705,709	753,754
754,758,760	
761,711,710	
756,757	
707,706	
Q IC	D

4-4. SCHEMATIC DIAGRAM — Amp Section —



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

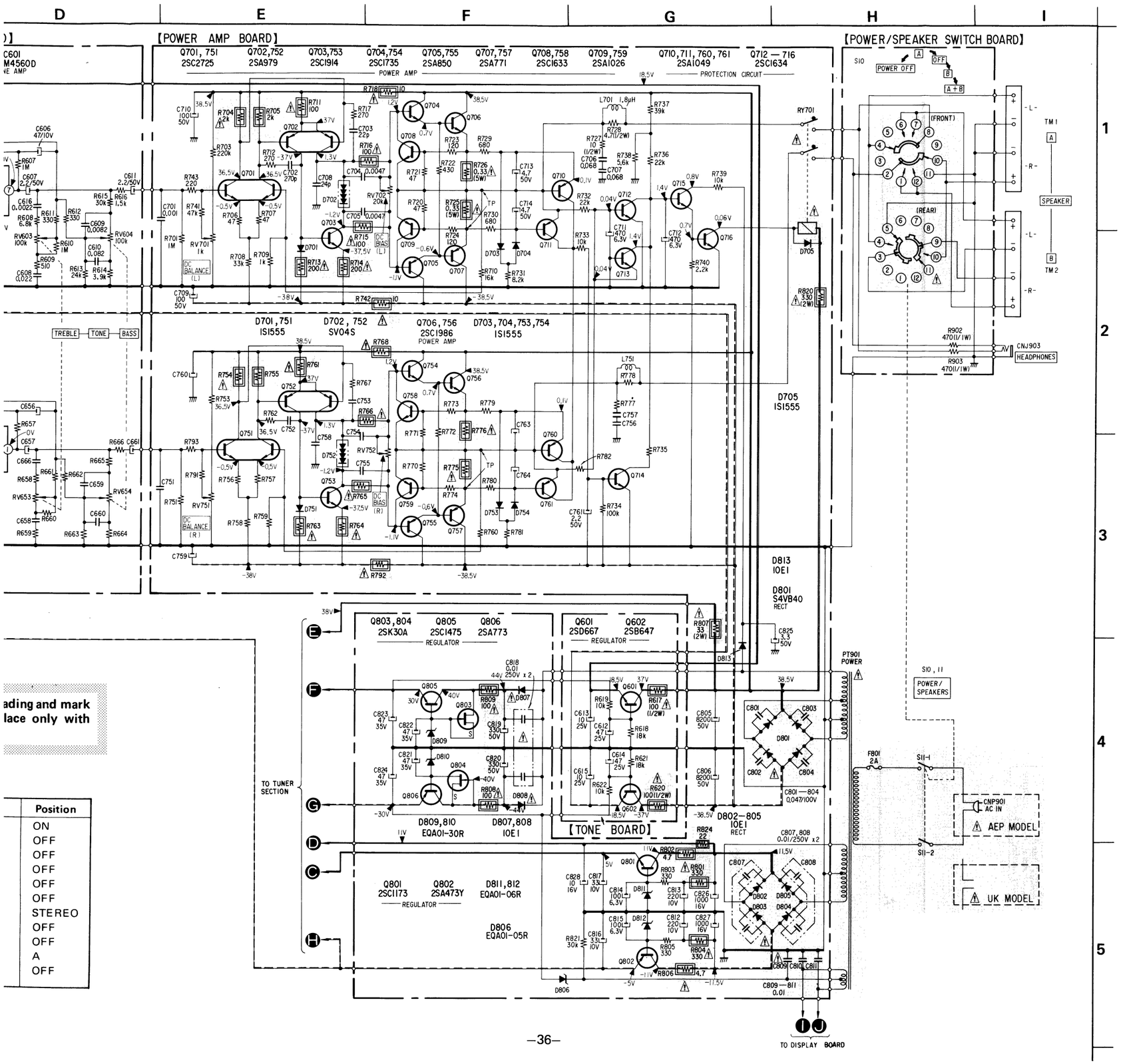
Note:

- Components for right channel have same values as for left channel. Reference numbers are 50 higher than left channel.
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted.
- : nonflammable resistor.
- : panel designation.
- : adjustment for repair.
- : B+ bus.
- : B- bus.
- Readings are taken under no-signal (detuned) condition in FM mode with a VOM (20 kΩ/V).
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.

- Switch

Ref. No.	Switch	Position
S1	FUNCTION PHONO	ON
S2	FUNCTION TUNER	OFF
S3	FUNCTION AUX	OFF
S4	MONITOR TAPE 1	OFF
S5	MONITOR TAPE 2	OFF
S6	TAPE COPY 1→2	OFF
S7	MODE	STEREO
S8	LOUDNESS	OFF
S9	LOW FILTER	OFF
S10	SPEAKERS	A
S11	POWER	OFF

- : signal path

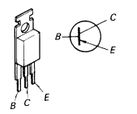


ading and mark
lace only with

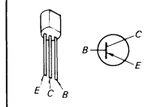
	Position
	ON
	OFF
	OFF
	OFF
	OFF
	OFF
	STEREO
	OFF
	OFF
	A
	OFF

Semiconductor Lead Layouts:

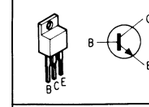
2SA473
2SA473Y



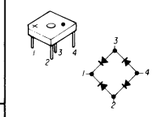
2SB740



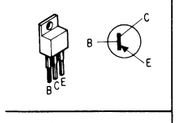
2SC1986



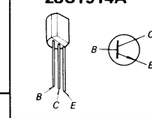
S4VB40



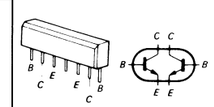
2SA771



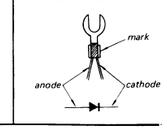
2SC710-14
2SC1914
2SC1914A



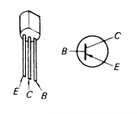
2SC2725



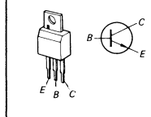
SV04S



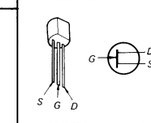
2SA773
2SB647
2SB647A



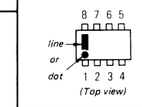
2SC1173



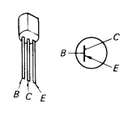
2SK30A



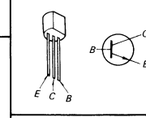
NJM4560D



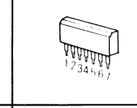
2SA850



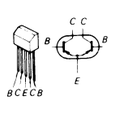
2SC1364
2SC1475
2SC1634
2SD667
2SD667A



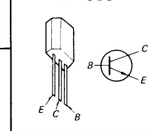
M5214L



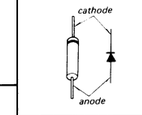
2SA979



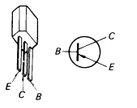
2SC1633



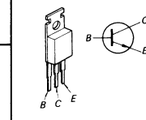
1S1555
10E1
10E2



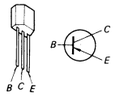
2SA1026
2SA1027R



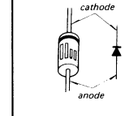
2SC1735



2SA1049

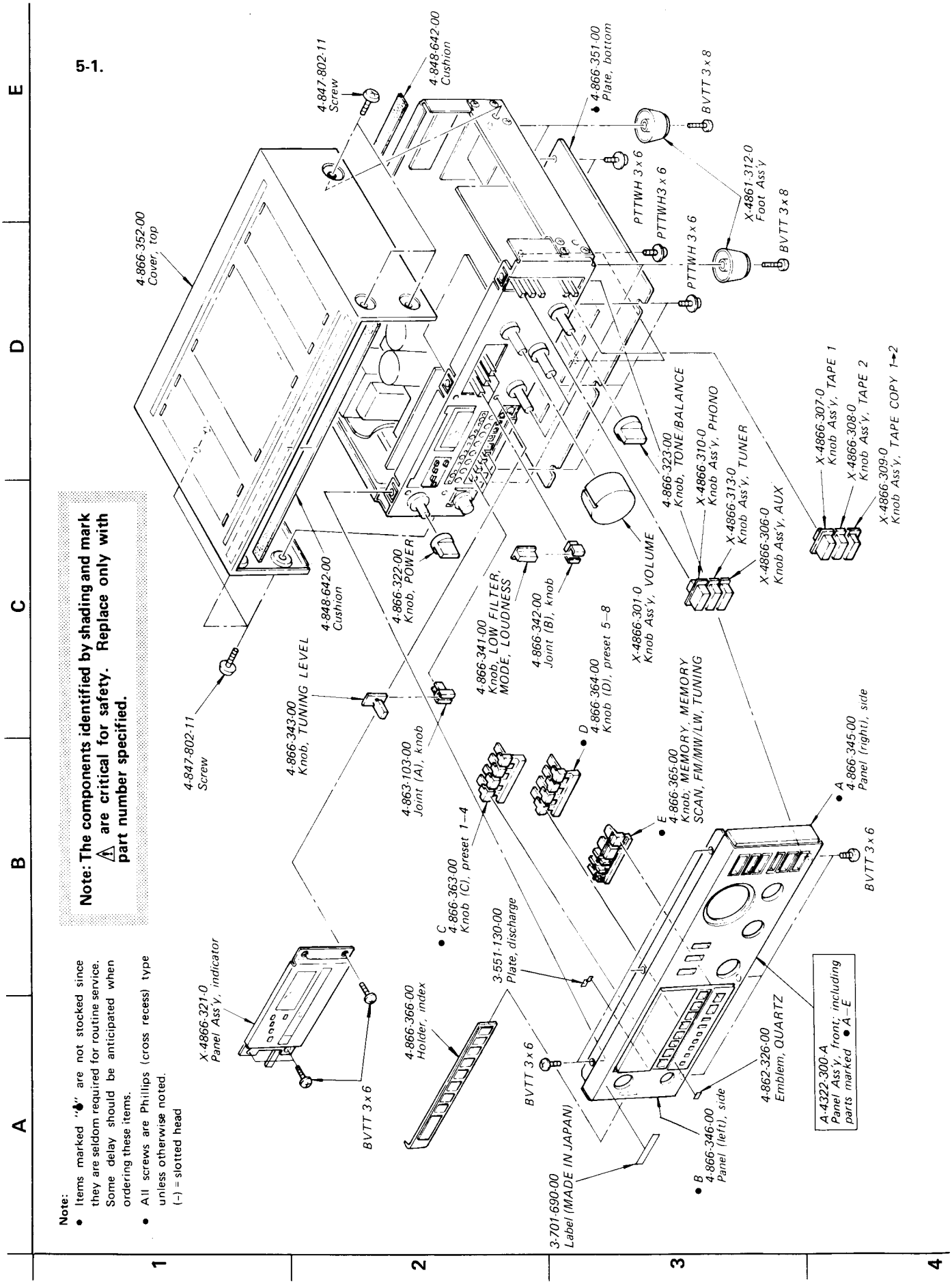


EQA01-05R
EQA01-06R
EQA01-30R
EQB01-05
EQB01-06
EQB01-30



SECTION 5
EXPLODED VIEWS

5-1.

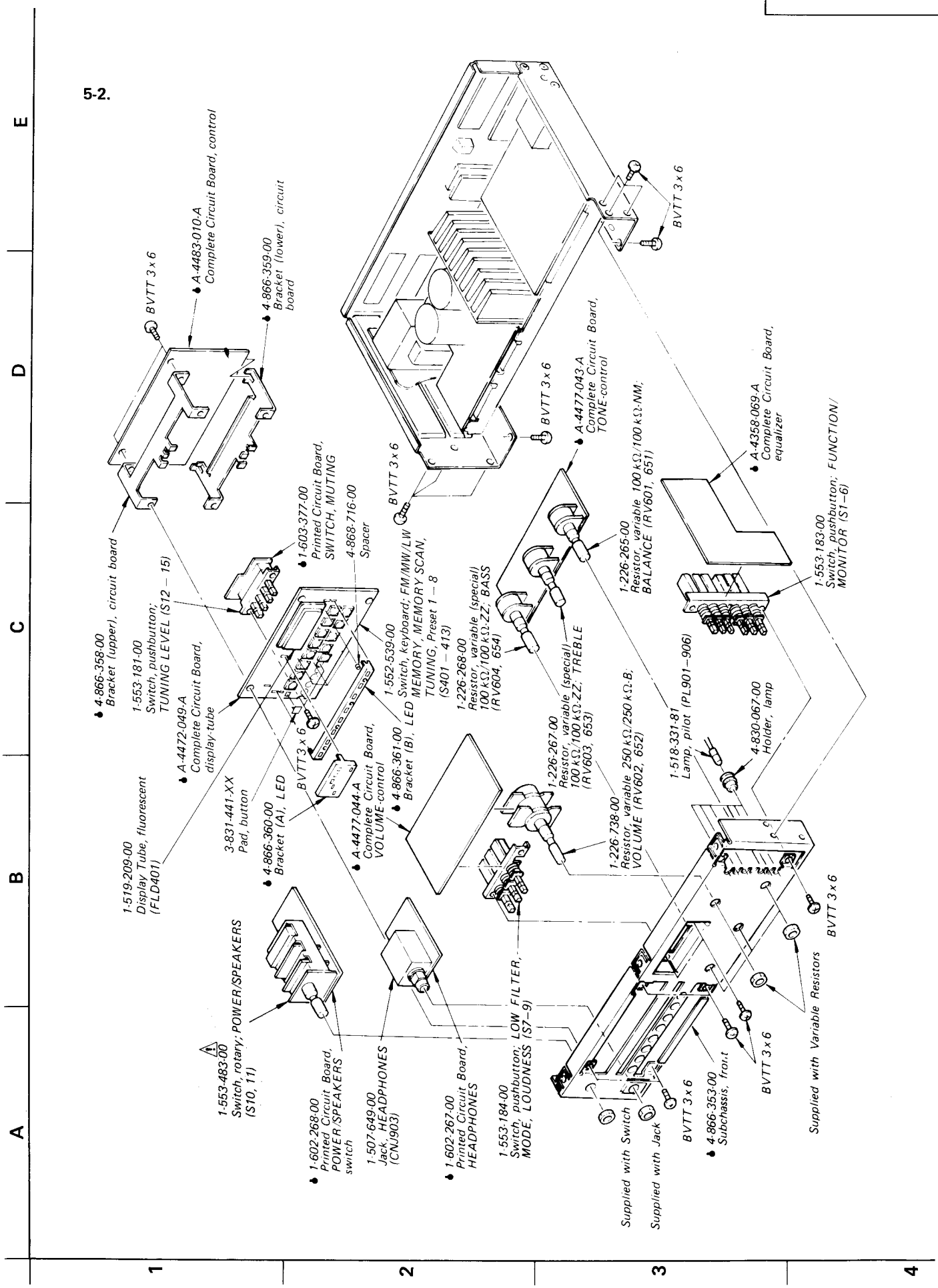


Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

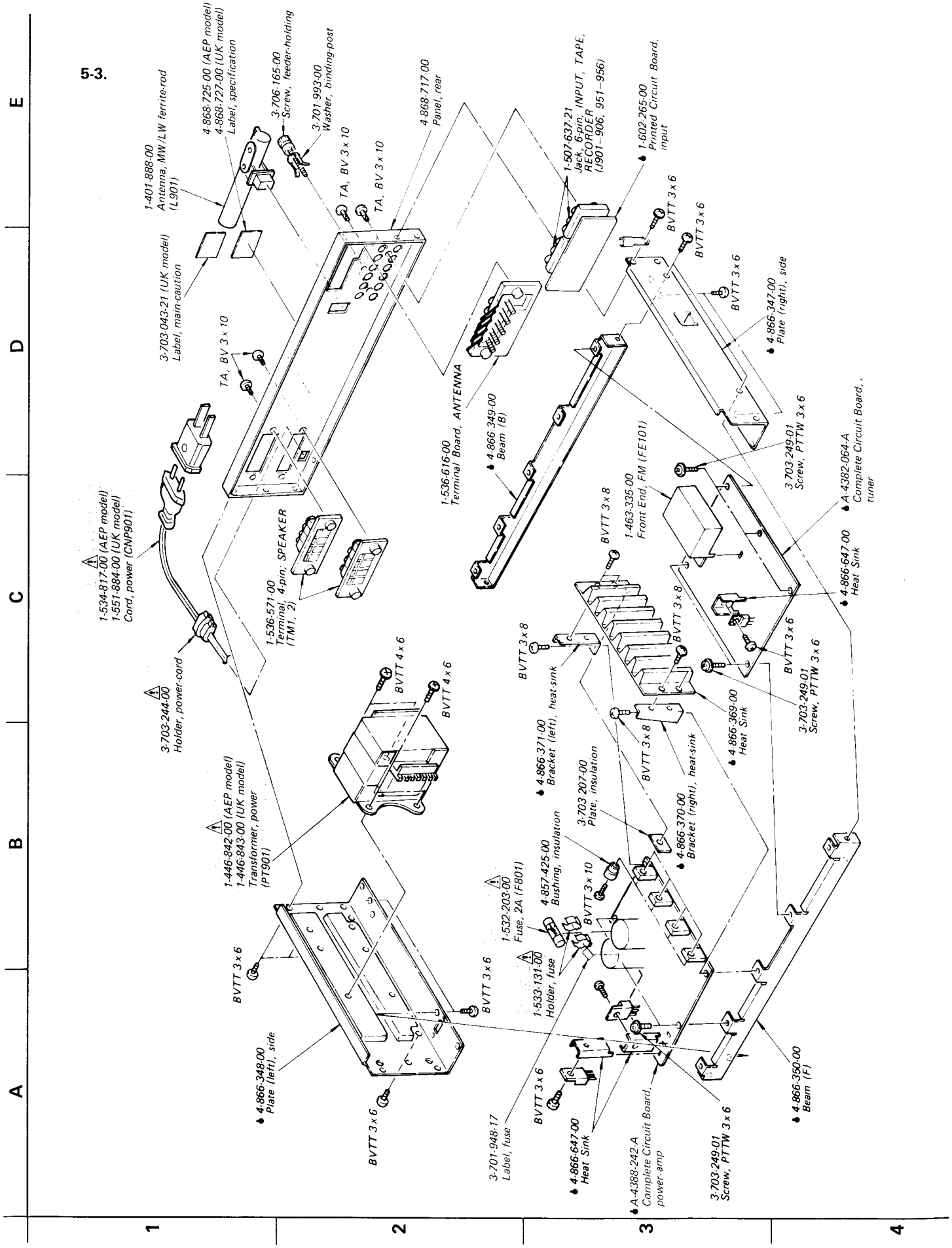
Note:

- Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

5-2.


A
B
C
D
E
1
2
3
4
4-866-358-00 Bracket (upper), circuit board
1-553-181-00 Switch, pushbutton; TUNING LEVEL (S12 – 15)
A-4472-049-A Complete Circuit Board, display-tube
1-519-209-00 Display Tube, fluorescent (FLD401)
3-831-441-XX Pad, button
4-866-360-00 Bracket (A), LED
BVTT 3 x 6
A-4477-044-A Complete Circuit Board, VOLUME-control
4-866-361-00 Bracket (B), LED
1-552-539-00 Switch, keyboard; FM/MW/LW MEMORY, MEMORY SCAN, TUNING, Preset 1 – 8 (S401 – 413)
1-603-377-00 Printed Circuit Board, SWITCH, MUTING
4-868-716-00 Spacer
A-4483-010-A Complete Circuit Board, control
4-866-359-00 Bracket (lower), circuit board
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
A-4477-043-A Complete Circuit Board, TONE-control
1-226-265-00 Resistor, variable 100 kΩ/100 kΩ-NM; BALANCE (RV601, 651)
1-226-268-00 Resistor, variable (special) 100 kΩ/100 kΩ-ZZ; BASS (RV604, 654)
1-226-267-00 Resistor, variable (special) 100 kΩ/100 kΩ-ZZ; TREBLE (RV603, 653)
1-226-738-00 Resistor, variable 250 kΩ/250 kΩ-B; VOLUME (RV602, 652)
A-4358-069-A Complete Circuit Board, equalizer
1-553-183-00 Switch, pushbutton; FUNCTION/ MONITOR (S1–6)
1-518-331-81 Lamp, pilot (PL901–906)
4-830-067-00 Holder, lamp
1-553-483-00 Switch, rotary; POWER/SPEAKERS (S10, 11)
1-602-268-00 Printed Circuit Board, POWER/SPEAKERS switch
1-507-649-00 Jack, HEADPHONES (CNJ903)
1-602-267-00 Printed Circuit Board, HEADPHONES
1-553-184-00 Switch, pushbutton; MODE, LOUDNESS
LOW FILTER, (S7–9)
Supplied with Switch
Supplied with Jack
BVTT 3 x 6
4-866-353-00 Subchassis, front
BVTT 3 x 6
BVTT 3 x 6
Supplied with Variable Resistors
BVTT 3 x 6

5-3.


1-401-888-00 Antenna, MW/LW ferrite-rod (L901)
4-868-725-00 (AEP model) 4-868-727-00 (UK model) Label, specification
3-706-165-00 Screw, feeder-holding
3-701-993-00 Washer, binding-post
TA, BV 3 x 10
TA, BV 3 x 10
4-868-717-00 Panel, rear
1-507-637-21 Jack, 6-pin, INPUT, TAPE, RECORDER (J901-906, 951-956)
1-602-265-00 Printed Circuit Board, input
BVTT 3 x 6
BVTT 3 x 6
BVTT 3 x 6
4-866-347-00 Plate (right), side
3-703-043-21 (UK model) Label, main-caution
TA, BV 3 x 10
1-536-616-00 Terminal Board, ANTENNA
4-866-349-00 Beam (B)
3-703-249-01 Screw, PTTW 3 x 6
A 4382-064-A Complete Circuit Board, tuner
1-534-817-00 (AEP model) 1-551-884-00 (UK model) Cord, power (CNP901)
1-536-571-00 Terminal, 4-pin, SPEAKER (TM1, 2)
1-463-335-00 Front End, FM (FE101)
BVTT 3 x 8
4-866-647-00 Heat Sink
BVTT 3 x 6
3-703-244-00 Holder, power-cord
BVTT 4 x 6
BVTT 4 x 6
BVTT 3 x 8
BVTT 3 x 8
4-866-371-00 Bracket (left), heat-sink
BVTT 3 x 8
4-866-369-00 Heat Sink
3-703-249-01 Screw, PTTW 3 x 6
1-446-842-00 (AEP model) 1-446-843-00 (UK model) Transformer, power (PT901)
3-703-207-00 Plate, insulation
4-866-370-00 Bracket (right), heat-sink
4-857-425-00 Bushing, insulation
BVTT 3 x 10
1-532-203-00 Fuse, 2A (FB01)
1-533-131-00 Holder, fuse
BVTT 3 x 6
BVTT 3 x 6
4-866-348-00 Plate (left), side
BVTT 3 x 6
BVTT 3 x 6
3-701-948-17 Label, fuse
4-866-647-00 Heat Sink
A 4388-242-A Complete Circuit Board, power amp
3-703-249-01 Screw, PTTW 3 x 6
4-866-350-00 Beam (F)
A
B
C
D
E
1
2
3
4

SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		SEMICONDUCTORS
		Transistors
Q101–106	8-729-671-14	2SC710-14
Q107	8-729-663-47	2SC1364
Q301, 302	8-729-663-47	2SC1364
Q303	8-729-203-04	2SK30A
Q304	8-729-398-62	2SC1986
Q305–310	8-729-663-47	2SC1364
Q311	8-729-201-52	2SA1015
Q312–319	8-729-634-47	2SC1364
Q320	8-729-201-52	2SA1015
Q321–324	8-729-634-47	2SC1364
Q401	8-729-203-05	2SK30A-GR3
Q402	8-729-665-47	2SC1362
Q403	8-729-203-05	2SK30A-GR3
Q404	8-729-665-47	2SC1362
Q405	8-729-663-47	2SC1364
Q406, 407	8-729-201-52	2SA1015
Q408–413	8-729-663-47	2SC1364
Q414	8-729-665-47	2SC1362
Q601	8-729-906-72	2SD667A
Q602	8-729-300-72	2SB647A
Q701, 751	8-729-672-52	2SC2725
Q702, 752	8-729-697-92	2SA979
Q703, 753	8-729-601-42	2SC1914A
Q704, 754	8-729-673-53	2SC1735
Q705, 755	8-729-685-03	2SA850
Q706, 756	8-729-398-62	2SC1986
Q707, 757	8-729-377-12	2SA771
Q708, 758	8-729-663-47	2SC1364
Q709, 759	8-729-612-77	2SA1027R
Q710, 760 Q711, 761	8-729-204-91	2SA1049
Q801	8-729-217-33	2SC1173
Q802	8-729-247-33	2SA473
Q803, 804	8-729-203-04	2SK30A
Q805	8-760-413-10	2SC1475
Q806	8-729-374-02	2SB740

Ref. No.	Part No.	Description
		ICs
IC101	8-759-812-31	LA1231
IC201	8-759-320-16	HA12016
IC301	8-759-140-66	μPD4066C
IC302	8-759-812-45	LA1245
IC303	8-759-984-69	MB84069B
IC304	8-759-140-11	μPD4011C
IC401	8-759-153-65	μPD553C065
IC402	8-759-607-78	CX778
IC403	8-759-140-11	μPD4011C
IC404	8-759-100-67	UPA67C
IC405	8-757-611-00	CX761A
IC406	8-759-920-10	IR2E01
IC501, 551	8-759-652-14	M5214L
IC601	8-759-745-60	NJM4560D
		Diodes
D101–103	8-719-815-55	1S1555
D301, 302	8-719-912-27	KV1226
D303, 304	8-712-600-00	1T26
D305	8-719-931-16	EQB01-16
D306–319	8-719-815-55	1S1555
D402	8-719-912-00	MV-12N
D403–412	8-719-815-55	1S1555
D416–419	8-719-815-55	1S1555
D420–424	8-719-922-41	SLP241B
D425	8-719-900-41	SLP141B
D426–433	8-719-311-12	SEL1112R
D434	8-719-812-41	TLR124
D701, 751 D703, 753 D704, 754 D705	8-719-815-55	1S1555
D702, 752	8-719-300-11	SV04S
D801	⚠8-719-504-40	S4VB40
D802–805	⚠8-719-200-02	10E2
D806	8-719-931-05	EQB01-05
D807, 808	⚠8-719-200-02	10E2

• Items marked "•" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description
D809, 810	8-719-931-30	EQB01-30
D811, 812	8-719-931-06	EQB01-06

CAPACITORS

All capacitors are in μF. Common capacitors are omitted. Refer to the lists on pages 44 and 45 for their part numbers.

C801–804	⚠1-108-385-00	0.047	100V	mylar
C807, 808, C818	⚠1-102-394-00	0.01	250V	ceramic
C809–811	⚠1-161-330-51	0.01	25V	film
C819, 820	⚠1-123-515-00	330	50V	electrolytic
CT301, 302	1-141-180-00	Trimmer		
CT303, 304	1-141-171-00	Trimmer		

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 46 for their part numbers.

R101	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R142, 143	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R201	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R314	⚠1-247-111-00	150	¼W	carbon (nonflammable)
R322	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R328	⚠1-212-863-00	18	¼W	fusible (nonflammable)
R617	⚠1-247-216-00	100	½W	carbon (nonflammable)
R620	⚠1-247-216-00	100	½W	carbon (nonflammable)
R704, 754, R705, 755	⚠1-247-138-00	2k	¼W	carbon (nonflammable)
R711, 761, R715, 765, R716, 766	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R713, 763, R714, 764	⚠1-247-114-00	200	¼W	carbon (nonflammable)
R718, 768	⚠1-247-083-00	10	¼W	carbon (nonflammable)
R725, 775, R726, 776	⚠1-217-157-00	0.33	5W	metal oxide
R727, 777	1-244-825-00	10	½W	carbon
R728, 778	1-244-817-00	4.7	½W	carbon
R742, 792	⚠1-247-083-00	10	¼W	carbon (nonflammable)
R801	⚠1-247-119-00	330	¼W	carbon (nonflammable)
R802	⚠1-247-079-00	4.7	¼W	carbon (nonflammable)
R804	⚠1-247-119-00	330	¼W	carbon (nonflammable)
R806	⚠1-247-079-00	4.7	¼W	carbon (nonflammable)
R807	⚠1-206-475-00	33	2W	metal oxide (nonflammable)
R808, 809	⚠1-247-107-00	100	¼W	carbon (nonflammable)
R820	⚠1-206-652-00	330	2W	metal oxide (nonflammable)
R824	⚠1-247-091-00	22	¼W	carbon (nonflammable)
R902, 903	1-213-139-00	470	1W	metal oxide (nonflammable)
RT101–103, RT201, 301	1-226-238-00	50k-B, adjustable; signal meter, FM tuning level, FM muting level, stereo separation, A-M muting level		
RT202	1-226-235-00	5k-B, adjustable; VCO		
RT401,402	1-226-427-00	500-B, adjustable; PLL		
RV601,651	1-226-265-00	100k/100k, variable; BALANCE		
RV602, 652	1-226-738-00	250k/250k-B, variable; VOLUME		
RV603,653	1-226-267-00	100k/100k, variable; TREBLE		
RV604,654	1-226-268-00	100k/100k, variable; BASS		

Ref. No.	Part No.	Description
RV701,751	1-226-233-00	1k-B, adjustable; dc balance
RV702,752	1-226-237-00	20k-B, adjustable; dc bias

MISCELLANEOUS

CF101–104	1-527-344-91	Filter, ceramic
CF301	1-527-403-00	Filter, mechanical
CF302	1-527-732-00	Filter, ceramic
CNJ903	1-507-649-00	Jack, HEADPHONES
CNP901	⚠ 1-534-817-31	Cord, power (AEP model)
	1-551-884-00	Cord, power (UK model)
F801	⚠ 1-532-203-00	Fuse, 2A
FE101	1-463-335-00	Front End
FLD401	1-519-209-00	Tube, fluorescent-display
IFT101	1-404-258-00	Transformer, discriminator
IFT301	1-409-323-00	Coil, mechanical-filter (PRI)
IFT302	1-409-324-00	Coil, mechanical-filter (SEC)
IFT303	1-404-266-00	Transformer, a-m IF
J901–906, J951–956	1-507-637-21	Jack, phono; 6-unit
L301	1-407-169-XX	100μH, microinductor
L302	1-407-173-XX	220μH, microinductor
L303	1-405-927-00	Coil, MW OSC
L304	1-405-914-00	Coil, LW OSC
L305	1-407-176-XX	390μH, microinductor
♦ L701, 751	1-420-838-00	Coil, air-wound
L901	1-401-888-00	Antenna, LW/MW ferrite-rod
LPF101	1-231-729-00	Filter, lowpass
LPF201	1-231-574-00	Filter, lowpass
PL901–906	1-518-331-81	Lamp, pilot; 6V 35mA
RY701	⚠ 1-553-227-00	Relay
S7–9	1-553-184-00	Switch, pushbutton; LOW FILTER, MODE, LOUDNESS
S10, 11	⚠ 1-553-483-00	Switch, rotary; POWER/SPEAKERS
S12–15	1-553-181-00	Switch, pushbutton; TUNING LEVEL
S401–413	1-552-539-00	Switch, keyboard; FM/MW/LW, MEMORY, MEMORY SCAN, TUNING, preset 1–8
TP901	⚠ 1-446-842-00	Transformer, power (AEP model)
	1-446-843-00	Transformer, power (UK model)

Ref. No.	Part No.	Description
X401	1-527-731-00	Crystal, quartz
	⚠ 1-533-131-00	Holder, fuse

COMPLETE CIRCUIT BOARDS

♦ A-4358-069-A	Equalizer
♦ A-4382-064-A	Tuner
♦ A-4388-242-A	Power Amp
♦ A-4472-049-A	Display
♦ A-4477-043-A	Tone-Control
♦ A-4477-044-A	VOLUME-Control
♦ A-4483-010-A	Control

PRINTED CIRCUIT BOARDS

♦ 1-602-265-00	Input
♦ 1-602-267-00	Headphone
♦ 1-602-268-00	POWER/SPEAKERS Switch
♦ 1-603-377-00	Switch, Muting

ACCESSORIES AND PACKING MATERIALS

Part No.	Description
1-501-161-00	Antenna, FM-feeder
3-701-630-00	Bag, plastic
3-783-168-11	Manual, instruction
3-795-036-11	Manual, instruction (Dutch and Swedish)
4-809-251-00	Bag, plastic
4-866-398-00	Cushion, top (front)
4-866-399-00	Cushion, bottom (left)
4-868-730-00	Carton
4-868-713-00	Cushion, top (back)
4-868-714-00	Cushion, bottom (right)

SONY-STANDARD CAPACITORS AND RESISTORS

ELECTROLYTIC CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.					
	6.3 VOLT.	10 VOLT.	16 VOLT.	25 VOLT.	35 VOLT.	50 VOLT.
	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
0.47					→	1-121-726-00
1.0					→	1-121-391-00
2.2					→	1-121-450-00
3.3	→	→	→	1-121-392-00	→	1-121-393-00
4.7	→	→	→	1-121-395-00	→	1-121-396-00
10	→	→	1-121-651-00	1-121-398-00	→	1-121-738-00
22	→	→	1-121-479-00	1-121-480-00	1-121-662-00	1-121-152-00
33	→	→	1-121-403-00	1-121-404-00	1-121-652-00	1-121-405-00
47	→	1-121-352-00	1-121-409-00	1-121-410-00	1-121-653-00	1-121-411-00
100	→	1-121-414-00	1-121-415-00	1-121-416-00	1-121-357-00	1-121-417-00
220	1-121-419-00	1-121-420-00	1-121-421-00	1-121-422-00	1-121-261-00	1-121-423-00
330	1-121-751-00	1-121-805-00	1-121-521-00	1-121-654-00	1-121-655-00	1-121-656-00
470	1-121-424-00	1-121-425-00	1-121-426-00	1-121-733-00	1-121-361-00	1-121-810-00
1000	–	1-121-736-00	1-121-245-00	1-121-657-00	1-121-388-00	1-123-061-00
2200	1-121-658-00	1-121-659-00	1-121-660-00	1-123-067-00	1-121-984-00	–
3300	1-121-661-00	1-123-075-00	1-123-071-00	–	–	–

CAP. (μF)	100 VOLT.	160 VOLT.	250 VOLT.	350 VOLT.
	PART No.	PART No.	PART No.	PART No.
0.47	–	–	–	–
1.0	1-123-249-00	1-123-252-00	1-123-003-00	1-121-168-00
2.2	1-123-250-00	1-123-026-00	–	1-123-028-00
3.3	1-121-995-00	–	1-123-004-00	1-123-006-00
4.7	1-123-255-00	1-121-246-00	1-121-759-00	1-123-007-00
10	1-121-126-00	1-121-999-00	1-123-254-00	1-123-008-00
22	1-121-996-00	1-123-253-00	1-123-005-00	1-123-022-00
33	1-121-997-00	1-121-757-00	–	–
47	1-123-251-00	1-121-919-00	–	–
100	1-123-084-00	–	–	–

CERAMIC CAPACITORS

CAP. (pF)	RATING							
	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (pF)	50 VOLT.	CAP. (μF)	50 VOLT.
	PART No.		PART No.		PART No.		PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

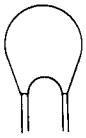
CERAMIC (SEMICONDUCTOR) CAPACITORS

CAP. (μF)	RATING → : Use the high voltage rated one.				
	25 VOLT.	50 VOLT.	CAP. (μF)	25 VOLT.	50 VOLT.
	PART No.	PART No.		PART No.	PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			

MYLAR CAPACITORS

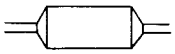
CAP. (μF)	RATING 50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.	100 VOLT. PART No.	200 VOLT. PART No.
0.001	1-108-227-00	1-108-365-00	1-108-409-00	0.01	1-108-239-00	1-108-377-00	1-108-421-00	0.1	1-108-251-00	1-108-389-00	1-108-433-00
0.0012	1-108-351-00	1-108-366-00	1-108-410-00	0.012	1-108-357-00	1-108-378-00	1-108-422-00	0.12	1-108-363-00	1-108-390-00	1-108-434-00
0.0015	1-108-228-00	1-108-367-00	1-108-411-00	0.015	1-108-240-00	1-108-379-00	1-108-423-00	0.15	1-108-252-00	1-108-391-00	1-108-435-00
0.0018	1-108-352-00	1-108-368-00	1-108-412-00	0.018	1-108-358-00	1-108-380-00	1-108-424-00	0.18	1-108-364-00	1-108-392-00	1-108-436-00
0.0022	1-108-230-00	1-108-369-00	1-108-413-00	0.022	1-108-242-00	1-108-381-00	1-108-425-00	0.22	1-108-254-00	1-108-393-00	1-108-437-00
0.0027	1-108-353-00	1-108-370-00	1-108-414-00	0.027	1-108-359-00	1-108-382-00	1-108-426-00	0.27	1-108-854-00	–	–
0.0033	1-108-232-00	1-108-371-00	1-108-415-00	0.033	1-108-244-00	1-108-383-00	1-108-427-00	0.33	1-108-855-00	–	–
0.0039	1-108-354-00	1-108-372-00	1-108-416-00	0.039	1-108-360-00	1-108-384-00	1-108-428-00	0.39	1-108-856-00	–	–
0.0047	1-108-234-00	1-108-373-00	1-108-417-00	0.047	1-108-246-00	1-108-385-00	1-108-429-00	0.47	1-108-857-00	–	–
0.0056	1-108-355-00	1-108-374-00	1-108-418-00	0.056	1-108-361-00	1-108-386-00	1-108-430-00				
0.0068	1-108-237-00	1-108-375-00	1-108-419-00	0.068	1-108-249-00	1-108-387-00	1-108-431-00				
0.0082	1-108-356-00	1-108-376-00	1-108-420-00	0.082	1-108-362-00	1-108-388-00	1-108-432-00				

TANTALUM CAPACITORS



CAP. (μF)	RATING → : Use the high voltage rated one. 3.15 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	25 VOLT. PART No.	35 VOLT. PART No.
0.01					→	→	1-131-396-00
0.015						→	1-131-397-00
0.022						→	1-131-398-00
0.033						→	1-131-399-00
0.047						→	1-131-400-00
0.068					→	→	1-131-401-00
0.1					→	→	1-131-402-00
0.15					→	→	1-131-403-00
0.22					→	→	1-131-404-00
0.33					→	1-131-409-00	1-131-405-00
0.47	–	–	–	–	1-131-412-00	→	1-131-406-00
0.68	–	–	–	1-131-415-00	→	1-131-410-00	1-131-407-00
1.0	–	–	1-131-418-00		1-131-413-00	→	1-131-408-00
1.5	–	1-131-421-00	–	1-131-416-00	→	1-131-411-00	1-131-348-00
2.2	1-131-424-00	–	1-131-419-00	–	1-131-414-00	1-131-355-00	1-131-349-00
3.3	–	1-131-422-00		1-131-417-00	1-131-362-00	1-131-356-00	1-131-350-00
4.7	1-131-425-00	–	1-131-420-00	1-131-369-00	1-131-363-00	1-131-357-00	1-131-351-00
6.8		1-131-423-00	1-131-376-00	1-131-370-00	1-131-364-00	1-131-358-00	1-131-352-00
10	1-131-426-00	1-131-383-00	1-131-377-00	1-131-371-00	1-131-365-00	1-131-359-00	1-131-353-00
15	1-131-390-00	1-131-384-00	1-131-378-00	1-131-372-00	1-131-366-00	1-131-360-00	–
22	1-131-391-00	1-131-385-00	1-131-379-00	1-131-373-00	1-131-367-00		
33	1-131-392-00	1-131-386-00	1-131-380-00	1-131-374-00			
47	1-131-393-00	1-131-387-00	1-131-381-00	–			
68	1-131-394-00	1-131-388-00	–	–			
100	1-131-395-00		–	–			

TANTALUM CAPACITORS



CAP. (μF)	RATING 3 VOLT. PART No.	6.3 VOLT. PART No.	10 VOLT. PART No.	16 VOLT. PART No.	20 VOLT. PART No.	35 VOLT. PART No.
0.033						1-131-273-00
0.047						1-131-274-00
0.068						1-131-275-00
0.1						1-131-276-00
0.15						1-131-277-00
0.22			–	–	1-131-262-00	1-131-278-00
0.33			–	–	1-131-263-00	1-131-279-00
0.47			1-131-169-00		1-131-264-00	1-131-280-00
0.68			–	1-131-258-00	1-131-265-00	1-131-281-00
1.0			1-131-254-00	–	1-131-266-00	1-131-282-00
1.5		1-131-250-00	–	–	1-131-267-00	1-131-283-00
2.2		–	–	1-131-259-00	1-131-268-00	1-131-284-00
3.3		–	1-131-255-00	–	1-131-269-00	–
4.7		1-131-251-00	1-131-171-00	–	1-131-270-00	–
6.8				1-131-260-00	1-131-271-00	–
10	–		1-131-256-00	–	1-131-272-00	–
15	–	1-131-252-00	–	1-131-261-00		
22		–	1-131-257-00	–		
33	1-131-176-00	1-131-253-00	1-131-173-00	–		
47	1-131-288-00	1-131-174-00	–	–		
100	1-131-177-00					

1/16 WATT CARBON RESISTOR

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	—	91	1-210-354-00	620	1-210-367-00	4.3k	1-209-772-00	30k	1-210-380-00	200k	1-210-839-00
2.2	—	15	—	100	1-210-355-00	680	1-210-106-00	4.7k	1-209-773-00	33k	1-210-381-00	220k	1-210-840-00
2.4	—	16	—	110	1-210-356-00	750	1-210-107-00	5.1k	1-209-774-00	36k	1-210-394-00	240k	—
2.7	—	18	1-211-688-00	120	1-210-357-00	820	1-210-108-00	5.6k	1-209-775-00	39k	1-210-382-00	270k	1-210-841-00
3.0	—	20	—	130	1-210-358-00	910	1-210-368-00	6.2k	1-209-776-00	43k	1-210-383-00	300k	—
3.3	—	22	—	150	1-210-102-00	1.0k	1-204-122-00	6.8k	1-209-777-00	47k	1-210-384-00	330k	1-210-842-00
3.6	—	24	—	160	1-210-359-00	1.1k	1-210-369-00	7.5k	1-209-778-00	51k	1-210-385-00	360k	—
3.9	—	27	—	180	1-210-360-00	1.2k	1-209-765-00	8.2k	1-209-779-00	56k	1-210-386-00	390k	1-210-843-00
4.3	—	30	1-210-845-00	200	1-210-361-00	1.3k	1-210-370-00	9.1k	1-209-780-00	62k	1-210-387-00	430k	—
4.7	—	33	1-210-846-00	220	1-210-362-00	1.5k	1-209-766-00	10k	1-209-781-00	68k	1-210-388-00	470k	1-210-844-00
5.1	—	36	1-210-847-00	240	1-209-762-00	1.6k	1-210-371-00	11k	1-210-374-00	75k	1-210-389-00	510k	—
5.6	—	39	1-210-848-00	270	1-210-363-00	1.8k	1-209-878-00	12k	1-210-111-00	82k	1-210-390-00	560k	1-211-695-00
6.2	—	43	1-210-849-00	300	1-210-364-00	2.0k	1-209-767-00	13k	1-210-375-00	91k	1-210-391-00	620k	—
6.8	—	47	1-210-395-00	330	1-209-763-00	2.2k	1-209-768-00	15k	1-210-112-00	100k	1-210-115-00	680k	1-211-696-00
7.5	—	51	1-210-101-00	360	1-210-103-00	2.4k	1-209-769-00	16k	1-210-376-00	110k	—	750k	—
8.2	—	56	1-210-351-00	390	1-210-365-00	2.7k	1-209-770-00	18k	1-210-113-00	120k	1-210-836-00	820k	1-211-698-00
9.1	—	62	1-210-352-00	430	1-210-366-00	3.0k	1-210-372-00	20k	1-210-377-00	130k	—	910k	—
10	—	68	1-210-353-00	470	1-209-764-00	3.3k	1-204-123-00	22k	1-210-114-00	150k	1-210-837-00	1 M	—
11	—	75	1-210-392-00	510	1-210-104-00	3.6k	1-210-373-00	24k	1-210-378-00	160k	—		
12	—	82	1-210-393-00	560	1-210-105-00	3.9k	1-209-771-00	27k	1-210-379-00	180k	1-210-838-00		

1/8 WATT CARBON RESISTOR

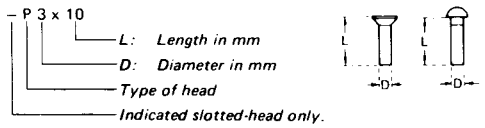
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

1/4 WATT CARBON RESISTORS

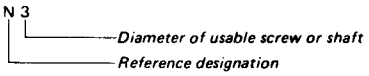
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4 hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	